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# MADRAS AGRICULTURE

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# PREFACE

A book which has an Introduction hardly needs a Preface. A Preface is intended to serve two purposes, to convey to the prospective reader a preliminary idea of the content of the book and the purpose it is designed to serve, and secondly to act as a vehicle of one's acknowledgement of help received in the preparation and publication of the book. The first function is here sought to be discharged by the Introduction I have written, and so I wish to confine the Preface to its second function.

My first duty is to record my thanks to the Vice-Chancellor and the Syndicate of the Madras University for sanctioning the publication of this book as a University Publication. The book is a product of the work I did as Lecturer in the Department of Indian Economics of the University, and its publication under University auspices comes to me as a mark of appreciation, by the University authorities, of the work I did and as a source of encouragement for future work. I must here acknowledge with gratitude the facility offered in the University for an undisturbed pursuit of academic and literary work and for the free expression of views and ideas.

I must also thank the Proprietor of the G. S. Press for the speedy execution of the work of printing and for his personal interest in the matter and Mr. M. Magimainathan, the clerk attached to the Department of Economics, for putting into typescript with care my illegibly written manuscript. I am grateful to Dr. B. Natarajan, Economic Adviser to the Government of Madras, for permitting the use of some data collected together in an unpublished paper of his on the Grow More Food Campaign in Madras, and for sending me some price quotations in advance of publication.

In preparing this book I have drawn upon many publications, which, in the nature of the case, it is impossible to individually acknowledge. Wherever it has been possible, I have given references.

University of Madras
30th September 1950

C. W. B. ZACHARIAS

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# INTRODUCTION

The constitution of the National Planning Commission marks yet another landmark in the growth and implementation of the idea of planning in India. Since securing independence, and in fact a little earlier than that, we have had planning of a sort both at the Centre and in the Provinces. Grandiose programmes were drawn up, albeit of a sectional character, and serious attempts were made by the ministries concerned to launch on them. But the lack of co-ordination between them and the unrealistic nature of some of them gave rise to conflicts and difficulties with the result that progress was soon halted. It came to be realized soon that co-ordination was of the essence of planning and that without it economic development would be as fitful and planless as under Capitalism, and that competition between Governmental plans in a context of scarce resources would be characterized by the same irritating frustration as attends unco-ordinated individual plans.

All plans, individual or social, involve the utilization of scarce resources. It is this scarcity which makes planning both desirable and inevitable; desirable because utilization would then be with maximum benefit, and inevitable because the alternative to it is uncontrolled utilization for individual, anti-social gains. But a process of planning which refuses to recognize this scarcity as a fundamental limitation hardly deserves the name, for it is planning for certain failure, disappointment, frustration and waste of effort. The desirability of planning stands on its *capability* for bringing into being an order of society characterized by superior well-being, without however sacrificing those higher values for which men are prepared to give up material comfort or even order. But whatever may be its promise, its appeal lies in its practicability and attainability and in the sense of realism that pervades the whole. These cannot be sacrificed for the vain pleasure of castle building in the air.

While co-ordination between the different sectional plans is essential for apportioning the available resources on the basis of an accepted system of priorities, each sectional plan should primarily be conceived as an integral part of the whole and should, in the demands it makes on resources, take into full consciousness the environment in which it is to exist and grow. Planning is essentially a planning of the utilization of resources for chosen ends, and therefore involves, besides a choice of ends, the conduct of an exhaustive census of resources and as complete a mobilization of them as the circumstances would permit. The ends chosen are

not independent of the resource pattern in existence, but conditioned by it and by the willingness of the human element, within the limits of its capacity, to modify that pattern. If the human element and its will be taken as part of the objective resources, it is just those resources which directly and indirectly determine the ends to be chosen. The criterion applied to the choice of ends however does not originate in the nature of resources, but is external to it, nevertheless the choice can be only from among those multitudinous ends made possible by the resource pattern. In a sense, then, available resources, existing and prospective, give shape and form to a plan, and no plan can be realistic which is not an outgrowth of those resources.

The study of resources is thus the first step in planning and the determination of targets of production only subsidiary to it. In any particular line of production, the target may appear to be independent of the means available, and may proximately be determined by social needs. But all the targets taken together and co-ordinated cannot be higher than what the resources permit. Under planning however the targets in many lines can be higher than normal production in pre-planning days, but this is so because there is a maximum utilization of all resources and the economy rises 'from more to more'.

The resource pattern of a country is determined by the geographical, physical, material, cultural, social, political and intellectual elements, comprising in it all of nature's gifts and all that man has made, all human qualities, all of man's knowledge and his ability to secure more knowledge, all his skill and the ability to acquire more skill, the whole of the elaborate social, political and economic structure he has built and the whole of the culture and civilization developed through the ages. Though this is so, some aspects and some parts of this resource pattern have greater relevence to economic planning and a more direct bearing on it, and those parts have to be analysed in detail before a plan can be formulated. It is simple to realize that we can plan only on a knowledge of what we have by way of economic resources and what we have already been doing with them. In what manner we can combine those resources and with what effect would depend on the general environment, in which would be included man's own skill. The study of those resources therefore is as much a part of planning as the fixing of targets and the enunciation of methods for attaining them.

It is with this idea of making a study of the economic resources available that this book has been written. It covers a section of

economic activity, viz. agriculture in Madras. Essentially it is a book of data and lays claim to providing the background required for the planned development of Madras agriculture. Therein agriculture as it exists to-day is presented as vividly as possible. The analysis of data is conducted from the point of view of planning requirements and an attempt is made to discover possibilities of improvement and expansion. The physical and institutional bases of agriculture are examined in detail, and this is followed by a study of productive activity.

Being a predominantly agricultural territory, with 84 per cent of the population engaged in agricultural activity, the study of Madras agriculture should be important and interesting in itself. This is reinforced by the fact that planned development, if it is to be successful, must start there. It is being increasingly realized now that the prosperity of a large country depends more upon the development of a balanced economy, in which the primary, the secondary and the tertiary industries will all play their part than on an exclusive expansion of the manufacturing industries. The large capital formation needed for an expanding economy must come out of agricultural prosperity, and the high level of agricultural incomes must provide the markets required for the absorption of industrial products. The prime requisite is a high per capita production in agriculture which can be generated only by a planning of that industry. Only higher production will vouchsafe a higher standard of living to the producers, and any plan which has that as its immediate and ultimate aim must give the position of primacy to agriculture.

That Madras agriculture needs a thorough re-organization and a development on all fronts is established beyond dispute by the food scarcity experienced now and the low levels of gross and net incomes there. To attain self-sufficiency in the matter of cereals alone, production must increase immediately by nearly 2·2 million tons or, to put it as a percentage increase, by 29 per cent. This need, viewed against the achievements of the Grow More Food Campaign, carried on incessantly for the last eight years, would indicate the uphill task that lies ahead and the supreme necessity there is for embarking on planning without delay.

It is futile however to increase food production without at the same time providing the income level which will ensure the purchase and consumption of the food produced. The great defect of the Grow More Food Campaign is that it has been conceived in isolation, unrelated to the general development of the economy. For

an adequate consumption of food, the income level of the community should be high, and that can be ensured only by higher production everywhere. Gross income to-day in Madras agriculture, at the high level of prices prevalent now, is no higher than Rs. 441 per annum per occupied population or Rs. 36-8-0 per month. This works out to Rs. 133 per annum per rural population or Rs. 11-1-0 per month. Net income per rural population is no higher than Rs. 80 per annum. If the average is so low as this, one can easily imagine the plight of those unfortunate classes of people whose earnings or incomes are below the average and who withal have to live and toil even to maintain this low production. Mere justice to these unfortunate victims requires that planning should be undertaken urgently. But a plan to be successful must be built up on the resource pattern, and this book seeks to depict that pattern.

## CHAPTER I

# PHYSICAL FEATURES

The State of Madras had the unique honour of having been the largest province of undivided India, and even to-day continues to have that honour in the Indian Union. It has an area of 126,166 square miles, and comprises in it 25 districts, one of which is the City of Madras. It occupies the southern portion of Peninsular India. On the east it is bounded by the Bay of Bengal and the Gulf of Mannar and on the west by the Arabian Sea and the United State of Travancore and Cochin. Its northern boundary is a line running from east to south-west touching Orissa, the Central Provinces, the Nizam's Dominions and the Bombay State. Its southern extremity is at the junction of the Arabian Sea and the Gulf of Mannar. Surrounded on three sides by the sea, it has a long coastline both on the east and on the west. Its eastern coastline is about 1,500 miles long, running east to south-west for two-fifths of the distance and due south for the rest. Its western coastline is about 250 miles long, running north to south, but with an easterly incline. Jutting into its territory from the north-west and lying as a pendant inside it are the State of Mysore and the adjoining centrally administered area of Coorg.

The general topography of the State is an elevated tract in the centre with plains both on the eastern and the western sea-boards. The plains are cut off from the elevated tract by two mountain systems, the Western and the Eastern Ghats. The Western Ghats run almost parallel to the west coastline at distances of 50 to 100 miles along the entire length, virtually shutting off the west coastal plain from the rest of the State. The only access to the plain from the interior of the State is through the Palghat gap, about 20 miles wide. The average height of these mountains is about 4,000 feet, with the highest peak, Doddabetta in the Nilgiris, rising to a height of 8,640 feet. They rise so steeply from the coast as to virtually obstruct the rain bearing clouds from passing them and entering the heart of the State. The nearness of the Western Ghats to the sea makes the west coast plain much narrower than the eastern plain, and the greater heights to which they rise cause a greater percipitation of rain there than in the rest of the State.

The Eastern Ghats starting from the State of Orissa enter the State near the Coast, but run into the interior of the peninsula in

a south-westerly direction till the river Kistna is passed. From there they turn due south for some distance; then again turn south-west till they get merged with the Western Ghats round about the Nilgiri mountains. The average height of these mountains is only 3,000 feet, and the highest elevation does not exceed 5,500 feet. Compared with the Western Ghats, these are a chain of smaller and discontinuous hills. The greater distances which stretch between these mountains and the coast give the characteristic feature to the intervening territory, of a broad fertile plain watered by the rivers which cut their way through the mountains and empty themselves into the Bay of Bengal. As offshoots of these mountain ranges lie scattered throughout the State other hills known as Shevaroys in Salem, Javadi hills in North Arcot, Anamalais in Coimbatore and Palni Hills in Madura.

Wedged in between these mountain systems lies, in the rain shadow, the elevated tract, the centre of the State. Bleak and comparatively infertile, with few rivers to water the soils, this tract exists in two segments. The northern segment comprising the Deccan area has common characteristics with parts of the Bombay State and the Nizam's Dominions and geographically forms part of the Deccan plateau. Its higher elevation and rugged soil mark it off from the other segment which on the average is lower in altitude and subject to more copious rainfall. The southern segment represents the undulation from the Mysore Plateau to the Carnatic plains, and so is a slope from west to east. It has elevations on the west comparable to the elevations in the northern segment, but they diminish as one passes from west to east. In both segments outliers of the Western and Eastern Ghats lie scattered, giving a rugged and undulating aspect to the whole area.

The Western Ghats are the source for most of the rivers of the State. Most of them, rising in these mountains, flow eastward across the elevated tract and the east coastal plain to the Bay of Bengal. These rivers, unlike the ones which flow westward into the Arabian Sea, have long courses which enable them to drain larger areas and gather together the waters of many tributaries before they enter the plains. On the plains they are broader and slower, throw out branches, and after meandering courses enter the sea. Three of the most important of these rivers are the Godavari, the Kistna and the Cauvery. The Godavari rises in the Bombay State some 50 miles east of the Arabian Sea, and flows in a south-easterly direction for about 900 miles, draining an area of about 115,000 square miles. It receives three important tributaries, the Wardha, the Indravathi and the Sabari, before it

enters the Coromandel plain. On the plain it forms the delta which is watered by the canals which take off from Dowlaishweram anicut built across the river, and by the two branches into which the river divides, Gautami Godavari and Vasishta Godavari. The Kistna also rises in the Bombay State, near Mahabaleswar, and after traversing some distance in that State flows into Hyderabad territory. It receives most of the tributaries in that region, the Bhima and the Tungabadra being the most important of them, and then enters the eastern plain. An anicut is built across the river at Bezwada, now Vijayawada, and below the anicut lie the two deltas, the eastern and the western. Like the Godavari it throws out branches in this region before reaching the sea. Its drainage area is roughly 97,000 square miles.

The Cauvery which is the third of the most important rivers, has her origin in Coorg, but flows eastward into Mysore where her waters are used for irrigational purposes at the Krishnarajasagar. After it enters the Madras State it receives its most important tributary, the Bhavani, and then flows through the districts of Salem, Trichinopoly and Tanjore. Large irrigational works have been constructed over this river in Madras also, such as the Mettur Dam, the Grand Anicut and the Upper and Lower anicuts, and the canals taking off from these works irrigate the whole delta. This river has a shorter course than the other two and drains a smaller area, but irrigates as large an area as the Kistna. Before it empties itself into the sea it throws out a branch, called the Coleroon, and the main river itself dwindles down to a small stream before it reaches the sea.

Other rivers which are also utilized for irrigational purposes on the eastern plain are the Pennar, the Palar, the Vaigai and the Tambraparani. The Tungabhadra which flows through the Deccan area of the State before it joins the Kistna has already a dam across it giving rise to the Kurnool-Cuddapah canal, used both for irrigation and for navigation, but the new dam under construction at Malappuram is expected to bring under irrigation an additional area of 400,000 acres.

The rivers which rise in the Western Ghats and flow westward into the Arabian Sea have much shorter courses and are ill-suited for irrigational purposes. The most important of these are the Netravathi in S. Kanara and Bharatha in Malabar, used over certain reaches for navigation.

*Rainfall* :—The State gets its rainfall from the South-West Monsoon, the North-East Monsoon and the hot weather rains. The South-West Monsoon period extends from June to September, the

North-East Monsoon from October to January and the Hot Weather from February to June. All the districts of the State get rains during these three periods, but to the greater part of the State the South-West Monsoon is the most important from the point of view of percipitation. The West Coast districts of South Kanara and Malabar and the mountainous district of the Nilgiris get the bulk of their rains during this period, while for Salem, N. Arcot, Chittoor, Cuddapah, Anantapur, Bellary, Kurnool, Guntur, Kistna, East and West Godavari and Vizagapatam, this monsoon is comparatively of greater importance. The remaining nine districts, Nellore, Chingleput, South Arcot, Tanjore, Madura, Ramnad, Tinnevelly, Coimbatore and Trichinopoly, get greater percipation during the North-East Monsoon. Malabar, and the Nilgiris usually experience a hot weather fall too of over 10 inches, and S. Kanara, Tinnevelly, Madura, Ramnad, Trichinopoly, Coimbatore, Salem and Vizagapatam have a rainfall of 5 to 7 inches during this period. Other districts get less than 5 inches, with Guntur, Kurnool, Cuddapah, Nellore and Chingleput getting below 3 inches. The following table gives the average fall for a series of years ending 1940 during the three periods and the total rainfall for the year:—

TABLE I

RAINFALL

*Average for a series of years ending 1940*

| | S.-W. Monsoon 7th June to 26th Sept. | N.-E. Monsoon 27th Sept. to 31st Jan. | Hot Weather 1st Feb. to 6th June | Grand Total |
|---|---|---|---|---|
| Vizagapatam .. | 25 | 11·3 | 5·1 | 41·4 |
| E. Godavari .. | 25 | 13·4 | 3·4 | 41·8 |
| W. Godavari .. | 27 | 10·4 | 3·3 | 40·7 |
| Kistna .. | 24·1 | 9·9 | 3·0 | 37·0 |
| Guntur .. | 18·5 | 11·0 | 2·9 | 32·4 |
| Kurnool .. | 15·7 | 6·0 | 2·5 | 24·2 |
| Bellary .. | 13·7 | 5·5 | 3·2 | 22·4 |
| Anantapur .. | 12·9 | 6·3 | 3·2 | 22·4 |
| Cuddapah .. | 14·6 | 9·9 | 2·6 | 27·1 |
| Nellore .. | 11·2 | 21·8 | 2·5 | 35·5 |
| Chingleput .. | 15·7 | 28·2 | 2·9 | 46·8 |
| S. Arcot .. | 15·8 | 26·9 | 4·1 | 46·8 |
| Chittoor .. | 14·9 | 14·6 | 4·2 | 33·7 |
| N. Arcot .. | 17·6 | 16·1 | 4·2 | 37·9 |
| Salem .. | 14·3 | 11·7 | 6·6 | 32·6 |
| Coimbatore .. | 7·9 | 12·9 | 6·6 | 27·4 |
| Trichinopoly .. | 11·6 | 16·7 | 5·9 | 34·2 |
| Tanjore .. | 11·3 | 28·9 | 4·9 | 45·1 |
| Madura .. | 8·9 | 16·7 | 6·7 | 32·3 |
| Ramnad .. | 7·3 | 19·2 | 5·8 | 32·3 |
| Tinnevelly .. | 3·4 | 20·8 | 6·2 | 30·4 |
| Malabar .. | 91·2 | 17·3 | 12·6 | 121·1 |
| S. Kanara .. | 128·4 | 13·2 | 7·8 | 149·4 |
| The Nilgiris .. | 41·6 | 20·8 | 12·0 | 74·4 |

The annual rainfall is above 100 inches only in two districts, S. Kanara and Malabar, 149·4 and 121·1 respectively. With the exception of the Nilgiris all other districts get below 50 inches. Tanjore, S. Arcot and Chingleput get between 45 and 50 inches and Vizagapatam, East and West Godavari between 40 and 45 inches. Kistna, Nellore and N. Arcot have a fall of 35 to 40 inches, and Guntur, Chittoor, Salem, Trichinopoly, Madura, Ramnad and Tinnevelly between 30 and 35 inches. The Ceded Districts and Coimbatore have below 30 inches and in Bellary and Anantapur it is nearer 20 than 30. Thus it is seen that on an average 21 districts of the State get below 50″ of rain, 18 districts below 45″, 15 districts below 40″, 12 districts below 35″, and five districts below 30″ of rain. Very nearly half the State has to depend on a rainfall of below 35″ during the year. Among those districts which fall into this category at least four, viz. Salem, Coimbatore, Madura and Tinnevelly, get 5 to 6″ of their annual rainfall during the hot weather. If the fall should happen in the earlier months of the period, say in February or March which is the dry period of the year, the percipitation will be of no utility to agriculture. For all practical purposes therefore these four districts fall into the last category of districts having a rainfall below 30″. The number in the last category is thus raised to 8.

Of the three periods of rainfall the utmost importance from the point of view of the State as a whole has to be attached to the South-West Monsoon period. The rains of this period regulate the sowings on the lighter dry lands, and if occasionally they should be late, the sowings will be rendered untimely, damaging the ordinary crops or necessitating the substitution of less valuable for more valuable crops. This delay if compensated by ampler rains towards the end of the period will do little harm however to the heavier soils which by nature are more retentive of moisture and are usually cultivated only towards the end of this period or early in October. The importance of this monsoon arises also from the fact that it is the source of water supply to the major rivers of the State, such as the Kistna, the Godavari, the Cauvery and the Tambraparani. All of them have their origin in localities where the South-West Monsoon is heavy and so their utility as sources of irrigation directly depends upon the abundance of the South-West Monsoon fall. In this respect, however, timeliness is not so relevant as volume, for a fall beyond the usual limits of the period will be as beneficial as a fall within the period. As a rule there is little rain from this monsoon in June and July except on the West Coast, but in August or September rain becomes general over the State.

Out of the five years, 1940-45, the South-West Monsoon was below the normal in all the five years in two districts, Vizagapatam and S. Arcot, for four years in 5 districts and for three years in 5 districts. Only in the last year of the period 1944-45 were the rains above normal in a majority of the districts. The table on page 7 shows the percentage departure from normal in all the districts of the State during the five years, 1940-45. In Vizagapatam, Kistna, Kurnool, Bellary, Anantapur, Nellore, Chittoor, N. Arcot, Salem, Trichinopoly, Tanjore, Ramnad, Tinnevelly, S. Arcot, Chingleput, Coimbatore, Madura, seventeen districts in all, the rainfall during this monsoon was deficient by about 20% in at least 2 years of the period. In Bellary, Anantapur, N. Arcot, Salem, Trichinopoly, Ramnad, Tinnevelly and Coimbatore, eight districts in all, the departure from normal in years of deficiency was by a higher percentage, by 30, and sometime above that. These are districts where the normal fall during this monsoon is no higher than 15 inches, except in N. Arcot where it is 17·6 inches, and so such a large percentage departure from normal during this important monsoon of the year is bound to have serious effects on agricultural productivity. Early sowings of dry crops are bound to be below normal. They actually were so in the Circars in 1940-41, 1941-42, 1942-43 and in the Deccan in 1942-43, 1943-44 and 1944-45. In Bellary, Anantapur, Ramnad and Coimbatore the lack of irrigational facilities to compensate any deficiency in rainfall exposes those districts to severe famine conditions on such occasions. In the two years, 1942-43 and 1943-44 relief works had to be opened in Bellary and Anantapur, and in Kurnool in the year 1942-43. Remission of land revenue had to be given every year of the period in some district or other, in Anantapur, Kurnool, Cuddapah, North Arcot and Chittoor especially, because of failure of rains.

The North-East Monsoon, between October and January, really gets established only in November and causes heavy rain on the east coast. It is important for the supply of water to the rainfed tanks and for raising some dry crops. But the dry crops raised except in the extreme south, are on heavy soils at the beginning of the monsoon or catch crops on the lighter soils towards the end of the rains. To Tinnevelly, Madura, Ramnad and Coimbatore these rains are of the utmost significance for dry cultivation on the heavier soils.[1] In no district is the percipitation during this mon-

1. Nine districts of the State, viz. Nellore, Chingleput, South Arcot, Tanjore, Trichinopoly, Madura, Ramnad, Tinnevelly, and Coimbatore get the largest portion of their rains during this monsoon.

soon higher than 28 inches and only in six districts higher than 20 inches. The Ceded Districts normally get about 5 to 6 inches, except Cuddapah which gets about 10 inches. In Coimbatore, Salem, Chittoor, S. Kanara and the Circars the fall hardly exceeds 13 to 14 inches.

Though total rainfall from this monsoon is not very heavy, fluctuations from the normal are of much significance. The usual phenomenon appears to be excess rather than deficiency from the normal. During the five years, 1940-45, nine districts, viz. N. Arcot, Salem, Coimbatore, the Nilgiris, Malabar, Tanjore, Trichinopoly, Madura and Ramnad, had excessive rains during all the five years. Six districts, viz. Anantapur, Cuddapah, Chittoor, Nellore, Chingleput and South Arcot had them in four years and the remaining 9 districts, Vizagapatam, East and West Godavari, Kistna, Guntur, Bellary, Kurnool, Tinnevelly and South Kanara, for three years. The following table shows the percentage departure from normal during the years 1940-45 in all the districts of the State. The years subsequent to 1945 have been omitted because they have been particularly abnormal.

TABLE II

RAINFALL

*Madras State*

S.-W. Monsoon

| | Normal inches | Percentage departure from normal | | | | |
|---|---|---|---|---|---|---|
| | | 1940-41 | 1941-42 | 1942-43 | 1943-44 | 1944-45 |
| Vizagapatam .. | 25 | − 7·1 | −33·7 | −19·4 | −17·1 | −20·4 |
| E. Godavari .. | 25 | − 5·3 | −19·1 | − 5·7 | − 2·8 | +14·4 |
| W. Godavari .. | 27 | + 4·2 | −23·1 | + 9·1 | + 3·0 | + 8·5 |
| Kistna .. | 24·1 | + 2·5 | −23·2 | −14·1 | −24·1 | − 5·0 |
| Guntur .. | 18·5 | −10·8 | −11·4 | −16·8 | − 2·2 | + 4·3 |
| Kurnool .. | 15·7 | −14·5 | −28·3 | −18·5 | −13·9 | + 9·6 |
| Bellary .. | 13·7 | −26·0 | −20·5 | −24·0 | −26·0 | — |
| Anantapur .. | 12·9 | −40·3 | −16·4 | −35·8 | −60·4 | + 0·8 |
| Cuddapah .. | 14·6 | − 5·8 | −10·8 | −11·7 | − 9·7 | +34·2 |
| Nellore .. | 11·2 | −18·6 | −11·5 | −20·3 | −23·0 | +21·4 |
| Chingleput .. | 15·7 | −24·7 | — | −21·5 | −12·0 | + 3·2 |
| S. Arcot .. | 15·8 | −28·3 | − 6·7 | − 9·6 | −17·5 | −10·1 |
| Chittoor .. | 14·9 | − 2·7 | − 0·9 | −28·9 | −43·0 | +28·9 |
| N. Arcot .. | 17·6 | −22·1 | −28·2 | −27·1 | −38·1 | +11·9 |
| Salem .. | 14·3 | −29·1 | − 8·8 | −34·5 | −41·2 | +31·5 |
| Coimbatore .. | 7·9 | −32·1 | + 7·1 | −27·4 | −59·5 | +30·4 |
| Trichinopoly .. | 11·6 | −32·2 | − 5·8 | −38·0 | −28·9 | +32·8 |
| Tanjore .. | 11·3 | −29·8 | −13·7 | −14·5 | −29·8 | +26·5 |
| Madura .. | 8·9 | — | −26·7 | − 2·2 | −52·2 | +33·7 |
| Ramnad .. | 7·3 | − 4·0 | −34·7 | −24·0 | −50·7 | +31·5 |
| Tinnevelly .. | 3·4 | −12·1 | −33·3 | −21·2 | −42·4 | + 5·9 |
| Malabar .. | 91·2 | + 9·7 | − 7·5 | + 4·9 | −11·9 | −28·7 |
| S. Kanara .. | 128·4 | +14·4 | −28·7 | + 8·4 | − 0·7 | −21·7 |
| The Nilgiris .. | 41·6 | +21·9 | +21·1 | + 7·4 | − 5·0 | −11·1 |

TABLE II (CONTD.)

RAINFALL

*Madras State*

N.-E. Monsoon

| | Normal inches | Percentage departure from normal | | | | |
|---|---|---|---|---|---|---|
| | | 1940-41 | 1941-42 | 1942-43 | 1943-44 | 1944-45 |
| Vizagapatam .. | 11·3 | —57·9 | +59·8 | +36·4 | +33·6 | — 4·4 |
| E. Godavari .. | 13·4 | —28·2 | +64·5 | +39·5 | — 4·8 | +36·6 |
| W. Godavari .. | 10·4 | —36·0 | +52 | — 5·0 | +23·0 | +36·5 |
| Kistna .. | 9·9 | — | +24 | —57·0 | +14·0 | +55·6 |
| Guntur .. | 11·0 | +51·9 | +15·1 | —61·3 | —11·3 | +45·5 |
| Kurnool .. | 6·0 | +42·6 | —39·3 | —63·9 | +44·3 | +26·7 |
| Bellary .. | 5·5 | +43·9 | —19·3 | —31·6 | +49·1 | +92·7 |
| Anantapur .. | 6·3 | +81·4 | +17·2 | —56·2 | +43·8 | +28·6 |
| Cuddapah .. | 9·9 | +51·4 | +11·5 | —27·6 | +53·3 | + 2·0 |
| Nellore .. | 21·8 | +65·1 | + 5·1 | —16·3 | +44·2 | +38·5 |
| Chingleput .. | 28·2 | +14·2 | +25·9 | —22·7 | +38·3 | +39·0 |
| S. Arcot .. | 26·9 | +50·2 | + 5·8 | —23·2 | + 2·7 | +19·0 |
| Chittoor .. | 14·6 | +37·4 | +25·2 | — 2·0 | +67·3 | +47·9 |
| N. Arcot .. | 16·1 | +28·9 | + 5·7 | + 6·3 | +37·1 | +13·7 |
| Salem .. | 11·7 | +31·0 | +17·2 | +30·2 | +59·5 | +24·8 |
| Coimbatore .. | 12·9 | +82·0 | +19·7 | +21·3 | +13·9 | +79·1 |
| Trichinopoly .. | 16·7 | +34·4 | + 6·3 | +10·6 | +22·5 | +30·0 |
| Tanjore .. | 28·9 | +35·8 | +12·3 | —32·3 | —14·0 | +30·4 |
| Madura .. | 16·7 | +65·2 | + 6·8 | +47·2 | +12·4 | +50·3 |
| Ramnad .. | 19·2 | +76·2 | + 3·8 | +61·1 | + 3·8 | +20·3 |
| Tinnevelly .. | 20·8 | +72·2 | —10·2 | +19·0 | — 8·3 | +17·3 |
| Malabar .. | 17·3 | +17·7 | +21·1 | +23·4 | +48·6 | +17·9 |
| S. Kanara .. | 13·2 | +60·6 | —12·6 | — 7·9 | +65·4 | +25·5 |
| The Nilgiris .. | 20·8 | +17·3 | + 5·3 | +20·7 | + 1·9 | + 4·3 |

TABLE II (CONTD.)

RAINFALL

*Madras State*

Hot Weather Rainfall

| | Normal inches | Percentage departure from normal | | | | |
|---|---|---|---|---|---|---|
| | | 1940-41 | 1941-42 | 1942-43 | 1943-44 | 1944-45 |
| Vizagapatam .. | 5·1 | + 37·5 | −29·2 | + 26·9 | + 83·3 | −25·5 |
| E. Godavari .. | 3·4 | +263·6 | −72·7 | + 78·8 | + 57·6 | +20·6 |
| W. Godavari .. | 3·3 | + 89·3 | −67·9 | + 82·1 | + 28·6 | +24·2 |
| Kistna .. | 3·0 | + 13·8 | −48·3 | +106·9 | + 31·0 | + 3·3 |
| Guntur .. | 2·9 | − 40·7 | −55·6 | +122·2 | +133·3 | — |
| Kurnool .. | 2·5 | − 17·4 | +30·4 | +130·4 | + 73·9 | +52·0 |
| Bellary .. | 3·2 | − 6·9 | +27·6 | +169·0 | + 55·2 | + 9·4 |
| Anantapur .. | 3·2 | − 27·6 | −27·6 | +106·9 | + 10·3 | +21·9 |
| Cuddapah .. | 2·6 | − 17·4 | −43·5 | +326·1 | +121·7 | −42·3 |
| Nellore .. | 2·5 | − 72·7 | −72·7 | +354·5 | +336·4 | −28·0 |
| Chingleput .. | 2·9 | − 76·0 | −16·0 | +392·0 | +276·0 | +55·2 |
| S. Arcot .. | 4·1 | − 14·3 | nil | +725·7 | + 74·3 | −31·7 |
| Chittoor .. | 4·2 | − 21·6 | −40·6 | +335·1 | +116·2 | — |
| N. Arcot .. | 4·2 | − 26·8 | − 4·9 | +319·5 | + 68·3 | + 9·5 |
| Salem .. | 6·6 | + 1·6 | +31·7 | + 65·1 | + 38·1 | −12·1 |
| Coimbatore .. | 6·6 | + 3·3 | +11·7 | + 43·3 | + 45·0 | +16·7 |
| Trichinopoly .. | 5·9 | + 3·5 | +35·1 | + 45·6 | + 17·5 | −15·3 |
| Tanjore .. | 4·9 | − 10·0 | +70·0 | +375·0 | + 75·0 | −12·2 |
| Madura .. | 6·7 | + 11·1 | +20·6 | + 19·0 | + 76·2 | −13·4 |
| Ramnad .. | 5·8 | + 6·0 | +58·0 | + 30·0 | + 62·0 | − 6·9 |
| Tinnevelly .. | 6·2 | + 19·2 | + 5·8 | + 57·6 | + 61·5 | −22·6 |
| Malabar .. | 12·6 | + 95·0 | +30·8 | +156·7 | + 19·2 | −26·9 |
| S. Kanara .. | 7·8 | + 93·2 | +35·6 | +257·5 | + 76·7 | −19·2 |
| The Nilgiris .. | 12·0 | nil | + 2·7 | + 48·2 | + 27·7 | −27·5 |

It is seen from the table that the seven districts of Vizagapatam, East Godavari, Bellary, Nellore, Chittoor, Salem and Madura had a percentage departure in the direction of an excess from normal of above 30 in three years and eleven other districts, viz., West Godavari, Guntur, Kurnool, Anantapur, Cuddapah, Chingleput, Coimbatore, Trichinopoly, Tanjore, Ramnad and South Kanara experienced similar phenomena in two years. Kistna, South Arcot, North Arcot, Tinnevelly and Malabar had an excess of above 30% in one year of the period. Excessive rainfall during this monsoon is the usual accompaniment of cyclonic weather which does not a little damage to the crops. In the years 1941-42, 1943-44 and 1944-45 cyclonic storms affected the east coast districts of the State damaging the standing crops of paddy and the dry crops. Drainage congestion and floods are usual features of this type of weather, and in addition to the damage caused by the storm, floods also add their quota. Land revenue remissions in these areas of excessive rainfall (the east coastal districts) are occasioned more frequently by damage caused by heavy rain and wind and flood rather than by drought.

The hot weather rains fall during the months of February to May. From January to March is the dry period, during which the rains are as a rule scanty and unreliable and so do not have much influence on agricultural practice. In some localities however they are useful to the provision of pasture and in the raising of catch crops. Occasionally they supplement a failing irrigational supply. The hot weather rains in the months of April and May commonly called the "Mango Showers" are due to the sea winds which blow on the south and east of the State. They occasionally produce thunderstorms and heavy rain. These rains however have to be distinguished from the early rains of the South-West Monsoon which sometimes fall in May. Where the hot weather rains are good, an earlier preparation of dry lands for cultivation is rendered possible and some hot weather crops like gingelly and cholam may be sown. As a rule the rains during this period hardly exceed 5 to 6 inches except on the Nilgiris and the West Coast.[2] Departures from normal are however considerable ranging between 700% and 3. Only in one district, viz., Coimbatore has the departure been consistently on the plus side. In 12 districts, viz., East and West Godavari, Kistna, Kurnool, Bellary, Salem, Trichinopoly, Madura,

2. In most districts of the Circars and the Deccan and also in the Nellore and Chingleput districts rainfall during this period ranges between 2 and 3 inches.

Ramnad, Tinnevelly, Malabar and South Kanara, excess departures were witnessed in four years of the period, 1940-45, in six districts, viz., Vizagapatam, Anantapur, Chingleput, North Arcot, Tanjore, and the Nilgiris for 3 years and in another five, viz., Guntur, Cuddapah, Nellore, South Arcot and Chittoor, for two years. That great uncertainty prevails regarding these rains is seen from the very wide fluctuations from year to year in every district. This season is really the off-season in agriculture when high temperatures generally prevail. The rains moderate the heat and except for the slight influence on agricultural practice indicated above, remain without effect on the activities of the farmers.

## CHAPTER II

# SOILS

The Royal Commission on Agriculture has classified the soils of India into four main varieties, viz, the red soils of the crystalline tract, the black cotton or regur soils of the Deccan trap and some isolated areas in the Madras State, the alluvial soils of the Indo-Gangetic plain and other river deltas and the laterite soils at the foot of the Eastern and Western Ghats. This classification is applicable with little change to the Madras State, as all these main varieties are found in some part or other of the State. The red soils which cover almost the whole of Madras are derived from the crystalline and gneissic rocks of the archaean system, but since these rocks vary widely in their characteristics, the soils derived from them also show corresponding differences. These differences are seen in consistency, depth and fertility and often in the colour of the soils too. Red, brown and even black soils are met with in this variety, and so it is necessary to guard against the mistake of thinking that all black soils belong to the black cotton or regur soil variety. In the uplands these soils are usually poor, thin, gravelly and light coloured. They get darker and heavier as we go down to lower levels. Irrigation by well or canal is possible and can be applied with advantage in the deeper varieties of this soil.

Three sub-classes exist in this variety, viz., clay soils, loams and sandy soils. Clay soils which are rather uncommon in this variety are made up of the finest particles, many of them so small as to be invisible to the naked eye. They are characterized by a high plasticity, and expand when moist and contract when dry. Very often they are impervious to water and offer great difficulties to the cultivator. Irrigation is not so easy as in other soils and often results in water logging and consequent damage to the crop. Soils which consist mainly of the largest particles are called gravelly or sandy soils. The pore space between the particles is large ; and so under irrigation or rainfall quick drainage into the sub-soil takes place. These soils are not very retentive of moisture and are subject to a speedy process of evaporation. The loams come intermediate between the clayey and the sandy soils and consist largely of silt. They are generally combinations of silt and clay or silt and sand and so shade into clay loams and sandy loams on either side.

The black cotton or regur soils of the Madras State, though possessing common characteristics with the soils of the same name in the Deccan trap, are still different from them in certain essential respects. They do not form one continuous whole as in the Deccan, but are divided into a number of large, but clearly defined, areas. Since these soils overlie and are derived from the rocks of the archaean system, the characteristics they disclose are intimately connected with the characteristics of those rocks and so are distinguishable from each other and from the soils of the trap area. These soils are never so deep as in the trap area. But in common with the soils of the Deccan they are finely grained and dark in colour and contain a high proportion of calcium and magnesium carbonates. Iron too exists in considerable quantities to which may be attributed the dark colour. As a rule these soils are very tenacious of moisture and form into moulds when wet. On drying the soil contracts, producing wide and deep fissures in the fields, through which sometimes the finer particles of the surface soil fall into the subsoil. This phenomenon, if widely prevalent, would cause a periodic renovation of the surface soil which would only be of benefit to cultivation. In this variety too the three sub-classes noticed above in connection with red soils exist, and have much the same characteristics as those. The possibility of irrigation in these soils, on which question there appears to be some controversy, would depend on to which sub-class a particular soil belongs. The greater cohesion between the particles which is a common quality of all black cotton soils is very greatly heightened in clayey soils, rendering irrigation virtually impossible. In loams and sandy soils however irrigation is found possible.

The alluvial soil, the third great variety of Indian soils, is found on the East and West Coasts of the State and at the mouths and along the courses of the rivers, the Godavari, the Kistna and the Cauvery. Unlike the sedimentary varieties noted earlier, this soil is a transported soil and so partakes of the qualities of the soils found in the drainage areas of the rivers. A great part of this soil is laterite in origin, but the deposits of silt brought by floods and the rivers have so changed the character of the soil that it is now a heavy rich loam producing under irrigation excellent crops of paddy, sugarcane, etc. Alluvial soils can easily be irrigated and can also be cultivated without irrigation if rainfall is moderate and well-distributed. Fertility depends to a certain extent on the depth of soil, but if the depth is favourable almost any crop can be grown. Here also it is possible to differentiate between the three sub-classes, clay, loam and sand, but as a rule the loam predominates.

The laterite soils are found along the Eastern and Western Ghats. They are so called because of their derivation from the laterite, a porous clayey rock composed essentially of a mixture of hydrated oxides of iron and aluminium. These soils readily yield up moisture and are of poor quality except when converted into an alluvium which happens in the valleys and lower levels through heavy rain and flooding. They then become dark-coloured heavy loams capable of retaining moisture and producing good crops. Near the coasts however they remain extremely gravelly and sandy and go by the name of Arenaceous soils in the settlement classification.

The classification adopted in the settlement of ryotwari areas of the Presidency however has not strictly adhered to these geological series. The classes distinguished there are black soils, red soils, arenaceous and alluvial soils. What is termed black is not always identical with the black cotton or regur soil, though some common characteristics are seen to exist, and the laterite soils of the two coasts are evidently included in the red ferruginous series. The typical regur soil of the State is found in the districts of Bellary, Kurnool, Cuddapah, Coimbatore and Tinnevelly only. According to settlement classification, the black soil covers nearly 11·3 million acres of occupied area forming a little less than a third of the total occupied area. (This figure does not include the Zamindari tracts of some districts). The figures given in the Statistical Atlas of the Madras Presidency, 1936, from which this computation is made, do not distinguish in the case of every district what part of the black soil is clay, loam or sand, and so it is impossible to state anything about the area covered by these sub-classes. But where the distinction has been made, as for instance in the districts of Vizagapatam, Kurnool, Anantapur, Cuddapah, South Arcot, Chittoor, North Arcot, Salem, Coimbatore and Trichinopoly, it is seen that black clay covers a total area of 2 million acres and black sand 1·2 million acres. In other districts also it is likely that these types of soil cover considerable areas, but in the absence of definite data it is inadvisable to hazard a guess.

The total area of red soils is much larger than the area covered by black soils and is roughly, according to settlement classification, 22·3 million acres of occupied land. Here also owing to the absence of proper classification in all the districts, it is impossible to distribute this total among the three sub-classes. But red clay covers 0·2 million acres and red sand 10·5 million acres in those districts where this sub-classification has been made. The total area of

alluvial and arenaceous soils are respectively 1·2 million acres and 0·6 million acres.

The black soils and red soils are widely spread throughout the State, but the alluvial soils are found, or at any rate classified as such, only in the districts of East and West Godavari, Kistna, Trichinopoly and Tanjore. The arenaceous soils naturally exist in East and West Godavari, Kistna, Guntur, Nellore, Chingleput, South Arcot, Malabar and South Kanara only. A detailed distribution of these soils in the various districts is given in the table below:

TABLE III

*Distribution of Soils*

| | Black Per cent | Red Per cent | Arenaceous Per cent | Alluvial Per cent | Mixed Per cent | Total (000) acres |
|---|---|---|---|---|---|---|
| Vizagapatam .. | 25 | 75 | — | — | — | 242 |
| E. Godavari .. | 9 | 33 | 6 | 52 | — | 715 |
| W. Godavari .. | 32 | 29 | 4 | 35 | — | 702 |
| Kistna .. | 65 | 6 | 10 | 19 | — | 661 |
| Guntur .. | 91 | 6 | 3 | — | — | 1646 |
| Kurnool .. | 73 | — | 27 | — | — | 2124 |
| Bellary .. | 50 | 30 | — | — | 20 | 2220 |
| Anantapur .. | 21 | 79 | — | — | — | 2011 |
| Cuddapah .. | 47 | 53 | — | — | — | 1490 |
| Nellore .. | 35 | 46 | 19 | — | — | 812 |
| Chingleput .. | 29 | 65 | 6 | — | — | 910 |
| S. Arcot .. | 35 | 62 | 3 | — | — | 1327 |
| Chittoor .. | 10 | 90 | — | — | — | 631 |
| N. Arcot .. | 16 | 84 | — | — | — | 1410 |
| Salem .. | 40 | 60 | — | — | — | 1803 |
| Coimbatore .. | 24 | 76 | — | — | — | 963 |
| Trichinopoly .. | 34 | 60 | — | 6 | — | 2862 |
| Tanjore .. | 48 | 21 | 7 | 24 | — | 1182 |
| Madura .. | 14 | 86 | — | — | — | 1322 |
| Ramnad .. | 73 | 27 | — | — | — | 1123 |
| Tinnevelly .. | 40 | 60 | — | — | — | 1090 |
| Malabar .. | — | 99 | 1 | — | — | 2303 |
| S. Kanara .. | — | 98 | 2 | — | — | 1961 |
| The Nilgiris .. | | | | | | |

The table discloses that black soils, which are usually considered to be more fertile than red or arenaceous soils, occupy over 70% of the occupied area in three districts, Guntur, Kurnool and Ramnad, in Guntur the percentage rising to above 90%. In Kistna they occupy 65% and in Bellary, Cuddapah and Tanjore nearabout 50%. In seven other districts, viz. West Godavari, Nellore, Chingleput, South Arcot, Salem, Trichinopoly and Tinnevelly, the

percentage is between 32 and 40. In Vizagapatam, Anantapur and Coimbatore they cover 20 to 25% ; while in East Godavari, Chittoor, North Arcot and Madura they form below 20%, falling as low as 10% in Chittoor. Thus only in seven districts do they form at least half the occupied area, and in seven other districts they are less than a quarter.

Excluding the Nilgiris where no soil classification has been effected, fourteen districts out of 23 districts have a predominence of the red soils. In Malabar, South Kanara, Madura, Coimbatore, North Arcot, Chittoor, Anantapur and Vizagapatam they form more than three-quarters of the occupied area, in Malabar and South Kanara the percentage rising as high as 99 and 98 respectively. In the other six districts, viz., Cuddapah, Chingleput, South Arcot, Salem, Trichinopoly and Tinnevelly, the percentage is between 50 and 65. Only in Ramnad, Tanjore, Guntur, Kistna, Bellary, West Godavari and East Godavari are the percentages below 30.

The arenaceous soils which are the least fertile, are seen only in the coastal districts, and they occupy only small percentages except in Kurnool where they form 27% and in Nellore where they are 19% of the total occupied area. The alluvial soils, which may be either black or red, are seen only in five districts, East Godavari, West Godavari, Kistna, Trichinopoly and Tanjore, covering 52%, 35%, 19%, 6% and 24% respectively.

This type of soil classification, though broadly indicative of the availability or non-availability of fertile soils in the different districts of the State, should not however be made to serve as the exclusive basis of fertility analysis. Rich red loam is in many localities more fertile than black clay or sand, and so merely on the basis of colour and broad characteristics a judgment in respect of fertility cannot be passed. The characteristics of black soils are not in every locality the same, and in many areas the distinction between red and black is mainly arbitrary, the two types shading into each other almost imperceptibly. Only on the basis of physical and chemical qualities of the soil can an accurate idea be formed of fertility. The physical classification dealt with above should therefore be supplemented by a chemical analysis for the discovery of the manurial qualities of the soils and the results obtained should be related to the different crops grown. Such a detailed chemical analysis has not been conducted in Madras, from the very great expense involved in the undertaking, except in the delta regions of Tanjore, Guntur, Godavari, Kistna and Periyar and in the district of Malabar. Even there the distinction between red

and black has not been made, the idea being merely to discover the nitrogen, phosphoric acid, potash, lime and magnesia content of the soils in those deltas. From the knowledge we have at our disposal therefore, only a very rough idea of the fertility of the soils can be gleaned.

From the point of view of manurial requirements all the four geological varieties in India are said to be deficient in nitrogen, phosphoric acid and organic matter, while potash and lime are considered sufficient except in the case of laterite soils where there is a deficiency of lime too. This general remark is all that can be made of the soils in Madras outside the delta areas or Malabar. And the information available regarding the deltas cannot be applied to the drier regions in close proximity to them for the simple reason that the deltas consist of transported soil brought down by the rivers along their courses and so are bound to be very different in physical and chemical qualities from the sedimentary soils of the neighbourhood.

Nevertheless, results of the chemical analyses conducted in those soils well repay study. The delta areas form a considerable proportion of the State's occupied area and are invaluable for the cultivation of our most important crop, paddy. In view of the urgent need that exists for the increased production of our staple food crop at the present time and in the near future, the possibilities open to us there of remedying deficiencies in soil fertility should be fully explored.

Agricultural research in different parts of the world has firmly established the proposition that the total quantities of chemicals, such as nitrogen, phosphoric acid, potash, lime and magnesia, available in the soil have little effect on fertility. For them to serve as plant food they must exist in forms easily assimilable by the plants, i.e. they must be in soluble forms. The proportion of these chemicals existing in soluble forms is technically called 'available nitrogen', 'available phosphoric acid', etc. Existing fertility is more dependent on this than on total nitrogen, phosphoric acid, etc. But total quantities are also significant in that they may through natural processes in course of time get transformed into soluble forms and be made available to the plants. The fairly common phenomenon of land left in fallow increasing in or regaining its lost fertility is to be attributed in the main to this natural process. Many soils both in India and abroad are found on analysis to have an excess rather than a deficiency of total chemicals. An analysis conducted in a black soil in the Agri-

cultural College, Coimbatore, and reported in the pamphlet entitled 'The Soil' by R. Cecil Wood, revealed that total nitrogen content was 262 lbs. in the first foot per acre, phosphoric acid, 1415 lbs., and potash, 11042 lbs. But further analysis for the discovery of available quantities showed that phosphoric acid had dwindled down to ·015% or 524 lbs., per acre in the first foot and potash to ·003% or 85 lbs., per acre. Available nitrogen cannot be discovered by chemical analysis as the conversion of insoluble forms into soluble forms is a complicated process dependent largely on bacterial activity.

The percentage of combined nitrogen and available phosphoric acid and potash should be 0·05%, 0·01% and 0·005% respectively for a piece of land to be considered fertile enough for the paddy crop. If actually the percentages should fall below these figures the indication is that the land will respond to manuring with suitable manures. The soil surveys conducted in the deltaic tracts of Tanjore, Guntur, Kistna, Godavari and the Periyar were really directed to the discovery of the percentages of these manures present in the soils. Those surveys have revealed that as far as nitrogen is concerned deficiency exists in Tanjore and Guntur, while in the other three deltas the fields are fairly well supplied with this chemical. Of the three latter the Periyar tract is more favoured than the other two, and in the Godavari delta over considerable portions, though there is no actual deficit, the limit of safety has been reached. The periodical application of large quantities of fresh soil, a practice common in the tract, and the extensive use of municipal refuse, including night soil and green manures, are perhaps responsible for the higher fertility of the Periyar tract. In Kistna, near the Godavari river and near the Kolair lake the soils are richer than elsewhere. Nearly two-thirds of the delta contains over ·045% of combined nitrogen and a fourth contains over 0·06%, due mainly to the practice of growing sunnhemp. In Guntur manuring, preferably with green manures, is indicated, as nearly three-fourths of the area contain less than 0·045% of nitrogen. Of all the delta regions, however, Tanjore is most deficient in this respect. Nowhere in this region is the percentage higher than 0·06, while half the delta contains less than 0·04%. The richer lands are along the bank of the Coleroon where an increased supply of nitrogen is probably made by irrigation water. The deficiency is greatest in fields or areas of defective drainage. In Malabar on the whole the nitrogen content is sufficient excepting a thin strip of land on the coast. 50% of the area contains 0·1% and more of available nitrogen.

In respect of phosphoric acid, Tanjore, Godavari, the Periyar deltas and Malabar reveal very unsatisfactory positions. In Tanjore except near the Coleroon and in portions of Papanasam, Mayavaram and Tiruthuraippundi taluks there is immediate need for the application of phosphatic manures. But potash is generally sufficient, as the greater part of the tract is well supplied with this chemical. Total potash is estimated to be ten times total phosphoric acid which doubtless indicates the need for phosphatic rather than potassic manures. Where potash present is greatest, there the soil is seen to be the poorest — a fact which goes far to show that defective drainage is the cause of both phenomena. In the Godavari delta too there is a marked deficiency in available phosphoric acid, half the delta being already deficient or exceedingly close to the limit of safety. The soils are however well supplied with total phosphoric acid. Available potash too is sufficient, especially in the neighbourhood of the coast, and total potash is estimated to be roughly eight times total phosphoric acid. Three-fourths of the Periyar district is deficient in phosphoric acid, the deficiency being most marked in half the area where the percentage is as low as ·002. The south-western portion of the district, contiguous to the Vaigai river, which contains the original paddy fields of the district, is the only portion where conditions are satisfactory. The application of nitrogenous fertilizers, fairly common in this tract, unaccompanied by a supply of soil phosphates has obviously been the cause of this result. The position regarding total phosphoric acid too is unsatisfactory. The whole area, with the exception of the Vaigai strip, contains less than 0·05%. The deficiency in phosphorus is therefore likely to continue and even increase in the future. In respect of potash, however, the area is well supplied, the percentage rising as high as 0·01 in the majority of the fields. Many of the fields contain 0·2% of total potash.

In the Kistna delta, where there does not seem to be any immediate need for the application of either phosphatic or potassic manures, 75% of the area is well supplied with phosporic acid and 85% with potash. Total quantities of these too are adequate, the amount of potash being eight times the amount of phosphoric acid. Much the same conditions prevail in the Guntur delta. Except for a large tract along the sea coast and another along the Nizampatnam canal the percentage of available phosphoric acid is above requirements. Deficiency in potash is seen only over a very small area near the river. Total potash is estimated to be ten times total phosphoric acid. In Malabar, though total phosphoric acid is

sufficient, there is general deficiency in available phosphoric acid, while in potash there is deficiency both in total and available potash.

Lime and magnesia, two other manurial constituents of the soil, are more important in dry than in wet cultivation. In dry cultivation their presence has a beneficial action on nitrification, but nitrification being infinitesmal in wet cultivation they do not get so much significance attached to them. However the useful service they render in preventing acidity in wet soils makes their existence invaluable even there. The ratio of lime to magnesia is said to have a determining effect on cropping power. As long as magnesia does not exceed the quantity of lime present in the soil, it may be added to a soil poor in this constituent with beneficial results on the yield. But if magnesia should be in excess of lime it will have a toxic influence on the crop and the yield will be reduced. Therefore soils containing an excess of magnesia should receive good dressings of lime. The ratio between the two should be greater than unity if fertility is to be maintained.

In the Periyar delta over a large area and in the northern portion of the Tanjore delta this ratio is less than unity, and therefore for the maintenance of cropping power and the prevention of acidity additions of lime should be made. More than three-fourths of the Periyar tract contain less than 1% of lime, and a very large portion in the east contains less than one-fourth of this amount. In the southern half of the Tanjore delta lime is in excess of magnesia, as also in Guntur, Godavari and 80% of the Kistna delta. Three-fourths of the Godavari delta contain not less than 1% of lime. Lands situated near the rivers in the Kistna, Godavari and Guntur tracts have as a rule a greater lime and magnesia content than lands farther away, evidently a result of the silt, rich in these constituents, deposited by the rivers. Towards the coast the soils become poorer. From the manurial point of view therefore the conservation of river silt is seen to be of importance. Malabar is deficient in both lime and magnesia, and what is even more unsatisfactory is that magnesia is in excess of lime. The second defect is more prominent in North Malabar than in South Malabar.

The deficiencies indicated above make it abundantly clear that if the fertility of the deltaic tracts is to be maintained or improved the application of appropriate manures should be undertaken. In certain localities definite and immediate action is demanded, and there should be a concurrent application of nitrogenous and phosphatic manures. Green manure, mineral phosphates and bonemeal will supply both nitrogen and phosphates at the same time. In

some parts, however, such as, for instance, in the Tanjore and Kistna deltas, defective drainage is more often the cause of infertility than inadequacy of manurial constituents, and in quite a number of cases, an alteration of the mechanical texture of the soil alone, through such processes as the addition of Patimannu as is done in Kistna, will effect any improvement.

In the delta regions paddy is the main crop, but the soils are eminently suitable, if the above mentioned deficiencies are removed, for the cultivation of sugarcane, tobacco, plantains, oranges and betel. Black loam which is considered to be the best soil in most districts, bears the highest rate of wet assessment, and under irrigation yields excellent crops of paddy, sugarcane, cotton, ragi, cholam, cumbu, bengal gram, indigo, and other cereals, but requires heavy rain to prepare it in dry cultivation. After sowing, the crop is not affected if rain fails, but at the time of maturity there should be light rain or heavy dew. Black clay usually yields good crops of cotton, cholam, red gram and varagu. Black sand and red sand are the poorest soils in the black and red varieties and are usually devoted to the cultivation of pulses, sweet potatoes, chillies, groundnut and the like. The red loam in some districts is considered more fertile than black clay and being an admixture of red clay and sand produces a variety of crops both in wet and dry cultivation. The crops usually grown are paddy, ragi, cholam, cumbu, horsegram, greengram, sugarcane, gingelly, etc. In the upland regions where the soils are lighter than on the level plains and valleys, the cultivation of mixed crops, such as oilseeds and pulses with cholam and cumbu is common. In the drier regions of the State, such as, the Ceded Districts, the red loam, because it contains a large admixture of sand, is generally poor and does not yield a good harvest even under normal rainfall. But it does not suffer from drought so much as the black soils of those areas. Red sand, as elsewhere, is the poorest soil in this region, and when it overlies a subsoil of rock and gravel, is treeless and arid. Where conditions are slightly better, it is used in predatory cultivation, taken up one year and abandoned the next. The arenaceous soils, which occupy the coastal areas of the State, are, as a rule, useful for the cultivation of the cocoanut and the palmyra palms and for casuarina.

## Chapter III

# WORK ANIMALS

The Cattle Census of 1944 is the latest census available for computing the numerical strength of work animals in the State. According to that census there were in the State 8·1 million working animals of which a little over 7 millions were working cattle and a little over 1 million working buffaloes. The total number of working cattle comprises 5·6 million working bullocks, ·8 million work and breeding bulls and ·58 million working cows. The distribution of these animals in the different districts is given in the table on pages 24 and 25.

The table shows that barring three districts, viz. Cuddapah, Kurnool and the Nilgiris, all districts have a total working animal population of over 200,000. In three districts the half a million mark is reached and in four other districts they number 400,000. In some of these districts, however, working buffaloes contribute a significant part of the total number. As a rule they are numerically strong in localities of heavy rainfall and in delta tracts. Thus Malabar and South Kanara have each 100,000 of them and in Guntur, Nellore, the Godavaries, Kistna and Tanjore they form a considerable number. But Vizagapatam possesses absolutely the largest number, and falling into neither of the above-mentioned categories, the phenomenon remains a little inexplicable. On the plains and in Coimbatore and Bellary they are inconsiderable. The more general use of the buffalo in regions of wet cultivation or of heavy rainfall is easily accounted for by the slow but excellent work qualities of the animal and its greater adaptation for work under such conditions than in the drier and lighter soils of other districts. The proportion that work buffaloes bear to work cattle for the whole State roughly approximates the proportion mentioned by the Royal Commission on Agriculture for the whole of India, viz., 3 to 20. But wide divergence from this ratio is seen in select localities.

Among working cattle cows occupy an important place only in eight districts, viz., Salem, Madura, North Arcot, Coimbatore, Trichinopoly, South Arcot, Chittoor and Ramnad. In the other districts, the numbers do not reach the ten thousand mark, and in 14 of them, fall below 5,000. It is clear therefore that in those areas, in spite of large numbers of dry cows being available, the practice of putting them to work is not extensive. Sentiment and the weak

condition of the animals concerned may be partly responsible for it. In the Circars and to a less extent in the Ceded districts where better breeds of cattle generally prevail, the cow is a stronger animal and is better fitted for work on the farm, but strangely enough it is just in those localities that low figures are recorded. In those areas there is undoubtedly scope for an extension of this practice with benefit both to the animal and the cultivation of the soil. Barring Chingleput, Tanjore and Tinnevelly, the Tamil area as a whole seems to be in favour of making the cow work. But the large majority of the cows in the southern and central districts and on the West Coast belong to the non-descript breed and are small and undersized. This militates against their full or extensive utilization in agricultural work. In some localities such as Chingleput, Tanjore and Tinnevelly the existence of bullocks in excess of requirements obviates the need for it. But where the animal is strong enough for the work of ploughing on heavy soils or for cart work, mere sentiment should not be permitted to stand in the way. In view of the fact that the cow is indispensable both as an yielder of milk and as a breeder of work animals, her use in agricultural work during the dry period would be one way of simultaneously achieving a reduction in the stock on the farm and solving the problem of feeding.

*Animal power available*: To discover the quantity of animal power available in each district, the total number of work animals should be related to the work to be done in cultivation and the working qualities of the animals themselves. In relation to the net area sown, wide disparity in numbers is seen to exist. The Table on pages 24-25 gives figures of working cattle and working animals in each district for every five acres of net area sown separately. In seven districts work cattle do not amount to one for five acres. In twelve other districts they do not come upto a pair and only in four districts do they exceed two. If instead of working cattle the number of work animals, including buffaloes, is taken into consideration, the situation is slightly altered, but not materially. Here too, six districts possess less than one, eighteen districts have less than two and only six districts have over two. For the state as a whole the relevent figures are 1·1 and 1·3 respectively.

The higher ratio seen in some districts is not an unmixed blessing, and is not an unmistakable index of the higher resource they have in cattle power. More often it is due to the lower capacity of the animals, the type of soil, the nature of cultivation followed, the kind of irrigation practised, the extent of the double

TABLE

*Madras*

Working animals — Cattle and

| District | | Net area sown 1944-45 Million acres | Working bullocks | Work and breeding bulls | Working Cows | Total working cattle | Working buffaloes | Total work animals |
|---|---|---|---|---|---|---|---|---|
| Vizagapatam | .. | 1·48 | 319278 | 82161 | 8205 | 409644 | 208678 | 618322 |
| E. Godavari | .. | 1·04 | 252272 | 42051 | 4268 | 298591 | 62127 | 360718 |
| W. Godavari | .. | 0·87 | 178037 | 31325 | 3116 | 212478 | 64712 | 277190 |
| Kistna | .. | 1·18 | 150653 | 17437 | 3492 | 171582 | 41077 | 212659 |
| Guntur | .. | 2·14 | 169755 | 24812 | 1346 | 193913 | 67106 | 261019 |
| Kurnool | .. | 2·01 | 134029 | 36730 | 245 | 171004 | 13372 | 184376 |
| Bellary | .. | 2·31 | 167254 | 27683 | 728 | 195665 | 6156 | 201821 |
| Anantapur | .. | 2·02 | 175762 | 58954 | 4526 | 239242 | 15081 | 254323 |
| Cuddapah | .. | 0·98 | 106078 | 38521 | 2189 | 146788 | 21086 | 167874 |
| Nellōre | .. | 1·29 | 171248 | 45200 | 2187 | 218635 | 68408 | 287043 |
| Chingleput | .. | 0·69 | 236985 | 57427 | 1952 | 296364 | 39543 | 335907 |
| S. Arcot | .. | 1·32 | 296498 | 72465 | 41877 | 410840 | 32353 | 443193 |
| Chittoor | .. | 0·76 | 250029 | 53165 | 29148 | 332342 | 15986 | 348328 |
| N. Arcot | .. | 1·11 | 406123 | 45778 | 61354 | 513255 | 23402 | 536657 |
| Salem | .. | 1·70 | 372531 | 48911 | 210198 | 631640 | 9190 | 640830 |
| Coimbatore | .. | 1·32 | 345902 | 29095 | 59354 | 434351 | 5370 | 439721 |
| Trichinopoly | .. | 1·30 | 351189 | 21195 | 55360 | 427744 | 16371 | 444115 |
| Tanjore | .. | 1·39 | 406446 | 17138 | 664 | 424248 | 44442 | 468690 |
| Madura | .. | 1·30 | 281466 | 27881 | 66533 | 375880 | 16852 | 392732 |
| Ramnad | .. | 1·32 | 239736 | 16035 | 25538 | 281309 | 17103 | 298412 |
| Tinnevelly | .. | 1·23 | 250066 | 17353 | 384 | 267803 | 18622 | 286425 |
| Malabar | .. | 1·53 | 216039 | 9353 | 1061 | 226453 | 141812 | 368265 |
| S. Kanara | .. | 0·58 | 164398 | 20601 | 748 | 185747 | 138826 | 324573 |
| The Nilgiris | .. | 0·11 | 4828 | 981 | 67 | 5876 | 2091 | 5967 |
| Madras | .. | | 1736 | 58 | — | 1794 | 32 | 1826 |
| The State | .. | 31·53 | 5648336 | 842310 | 584540 | 7075186 | 1087798 | 8162984 |

IV

*State*

Buffalo and their Distribution — 1944

| Working animals per 5 acres | Young Stock: Male cattle | Young Stock: Male buffalo | Young Stock: Male cattle percentage to total working males | Young Stock: Male buffalo percentage to total working males | Total young stock male | Total young stock male percentage to total working males | Bullocks not in use | Buffaloes male not used |
|---|---|---|---|---|---|---|---|---|
| 2 | 120466 | 62044 | 30 | 30 | 182510 | 30 | 26412 | 29956 |
| 1·7 | 90369 | 48351 | 30 | 77 | 138720 | 38 | 15790 | 6536 |
| 1·6 | 59735 | 54772 | 30 | 85 | 114507 | 41 | 9035 | 6985 |
| ·9 | 49107 | 84798 | 30 | 200 | 133905 | 63 | 7518 | 4233 |
| ·6 | 45519 | 125350 | 23 | 186 | 170869 | 65 | 7310 | 6914 |
| ·4 | 30379 | 42985 | 18 | 330 | 73364 | 40 | 5935 | 1928 |
| ·4 | 40561 | 20376 | 20 | 333 | 60937 | 30 | 6084 | 1017 |
| ·6 | 58092 | 27114 | 24 | 180 | 85206 | 33 | 12556 | 2685 |
| ·8 | 27648 | 37786 | 19 | 181 | 65434 | 39 | 4547 | 4848 |
| 1·1 | 63403 | 81198 | 29 | 119 | 144601 | 50 | 8963 | 9671 |
| 2·4 | 65992 | 22238 | 22 | 55 | 88230 | 26 | 19070 | 5308 |
| 1·6 | 97149 | 18140 | 24 | 56 | 115289 | 26 | 36931 | 4559 |
| 2·5 | 91864 | 23560 | 28 | 150 | 115424 | 33 | 17496 | 3505 |
| 2·4 | 80736 | 17100 | 16 | 74 | 97836 | 18 | 28803 | 3546 |
| 1·9 | 133012 | 23681 | 20 | 255 | 156693 | 24 | 52382 | 1397 |
| 1·6 | 140612 | 27372 | 32 | 540 | 167984 | 38 | 25029 | 740 |
| 1·7 | 86413 | 27623 | 20 | 175 | 114036 | 26 | 17485 | 1257 |
| 1·7 | 105725 | 31128 | 25 | 70 | 136853 | 29 | 8739 | 1697 |
| 1·5 | 73957 | 19832 | 20 | 117 | 93789 | 24 | 16725 | 1242 |
| 1·1 | 54689 | 15389 | 20 | 88 | 70078 | 23 | 12780 | 2615 |
| 1·1 | 51390 | 24589 | 19 | 131 | 75979 | 26 | 9140 | 2013 |
| 1·2 | 128804 | 20560 | 59 | 15 | 149364 | 40 | ·5361 | 2751 |
| 2·8 | 74660 | 13940 | 40 | 10 | 88600 | 27 | 6044 | 11113 |
| 2·7 | 4804 | 2060 | 81 | 100 | 6864 | 115 | 598 | 209 |
| — | 704 | 464 | — | — | 1168 | — | 26 | 4 |
| 1·3 | 1775790 | 872450 | 24 | 80 | 2648240 | 32 | 360759 | 116729 |

cropped area and the grazing facilities available. In some districts, notably in Guntur, Nellore, Kurnool, Salem and Coimbatore, numbers are increased through systematic cattle breeding. As a rule, abundant grazing facilities have a significant effect both on numbers and the size and strength of animals. Thus in the upland regions of West Godavari, Kistna, Kurnool and Salem a better type of animal usually exists, mainly because of the superior grazing available there. In wet cultivation generally, larger numbers are needed, for lack of grazing necessitates stall feeding with adverse effects on the working capacity of the animals, and the heavy soils which one usually meets with in such cultivation require more animal power. In delta regions where paddy is almost always cultivated on heavy soils, there is usually more work per acre per animal, and since the animals are weak and poorly fed, large numbers have to be maintained. Those regions usually disclose the dregs of the cattle market. Longevity too is very low.

But the most important factor determining numbers is the work quality of the animals. The superior breeds, such as, the Mysore, the Ongole (Nellore) and the Kangayam, are fairly widespread in the State, but numerically they form a minority. In the Circars the superior animals invariably belong to the Ongole breed, while in the Ceded Districts the Mysore breed also plays an equally important part. In the Southern and Central Districts and in Malabar the Kangayam and Mysore breeds are popular, while South Kanara imports all its better animals from Mysore. The better breeds are used both for the plough and the cart, with a preference for the cart. The Mysore or Halliker breed, especially the Amirt Mahal variety of it, has an all-India reputation as active and enduring transport animals, and were greatly in requisition in the military campaigns of Tippu Sultan and Sir Arthur Wellesley (later Duke of Wellington).[1] They are specially adapted to road work as they are quick, very high spirited and have extremely hard sound feet. They are the thoroughbreds among cattle in India. They can be continuously in yoke for about 16 hours and are thoroughly trained to work at the age of 5. They are not so suitable for the plough, being highly strung and apt to be fierce, and yet when thus used they reveal remarkable powers of endurance. But the large majority of the Mysore animals used for carts in South India belong to the

1. Cattle of Southern India by Lt. Col. W. D. Gunn. Bulletin No. 60, Department of Agriculture.

Alambadi breed, slightly inferior to the Amirt Mahal breed, but having very many common characteristics with it.

The Nellore or Ongole breed also is a fine type of animal for work. It is huge, extremely docile and unsurpassable for slow heavy work. In the City of Madras it is chiefly employed for drawing heavy loads of nearly 5 tons. Both for cart work on village roads and for the plough on heavy soils this animal may be used with advantage. It has a reputation even outside India, and large numbers used to be exported to Java and South American countries. The very great care bestowed on young animals by breeders in feeding accounts for this reputation. Calves are allowed to suckle the whole of the cow's milk.

The Kangayam breed, variously called Kanganad, Konga, Kangani, is bred in the southern and south-eastern taluks of Coimbatore and parts of Salem. The pure variety exists in the herds maintained by the Pattagar of Palliyakottai. Good varieties of this breed are to be found in Madura and Tinnevelly too. This breed in general conforms to the Mysore type, but seems to have an admixture of the northern white in it. The animals are of moderate size, though a smaller variety also exists, and are powerful as draught cattle. Good feeding is essential, but in the matter of fodder, these are more economical than the other two breeds. They may be started on work earlier than the Mysore breed, to the plough at 2½ years of age and to the cart at 3½ years.

Apart from these three important breeds, there are two minor breeds of superior animals largely found in Madura, the Pulikolam or Jellicut breed and the Kappiliyam. The Pulikolam is a numerous breed in the south and south-west of Madura, in the Cumbum Valley and in the Periyar Tract. They are compact animals with stout legs and hard feet and capable of hard work and much endurance. Small in size, they resemble the smaller variety of the Kangayam, but are of finer breed and perhaps have a strain of Mysore blood. They are frequently used for coach work, since they are capable of trotting continuously for 5 or 6 miles an hour. The Kappiliyam breed is seen in the Cumbum Valley of the Madura district. It is popularly called the sacred herd (Thambiran Madu). The animals are small, active and round barrelled, and well known for their trotting powers. As in the case of the Ongole breed, the cows used for breeding are not usually milked.

Except for these few breeds of superior cattle, the bulk of the animals used in farming belong to the non-descript breed of small animals prevalent all over the State. These are able to thrive

where heavier animals cannot, which accounts for their numerical superiority in most districts of the State. Nevertheless they render useful service in light ploughing and in drawing light carts. If well fed they are hardy and active work cattle. It is the predominence of these among farming cattle that is chiefly responsible for the large numbers of cattle of all varieties, maintained on Madras farms. As the Royal Commission on Agriculture have said, " the number of cattle within a district depends upon and is regulated by the demand for bullocks. The worse the conditions for rearing efficient cattle are, the greater the numbers kept tend to be."

In this respect, Madras is no way behind the other states of India, except the Punjab, and Sind where large numbers of heavy cattle prevail, and definitely better than Bengal. However the emphasis placed by the Royal Commission on Agriculture on the excessive number of cattle maintained on Indian farms is of peculiar application to this State, and the need undoubtedly exists for a reduction in that number through an increase in the efficiency of plough cattle. Better feeding and more scientific breeding are doubtless the remedies for this sorry state of affairs.

Where the superior breeds exist in large numbers, the area which a pair of oxen can cultivate is generally larger. The wide variation seen in the area that a pair of oxen can till in different districts and in different taluks in the same district is partly accounted for by this and partly also by the type of soil and the kind of crop grown. According to H. C. Sampson,[2] a pair of oxen can manage only 6 acres in rice cultivation and not more than two in garden cultivation. In dry cultivation the area may increase to about 15½ acres and on black cotton soils, where only the heavier animals can be used, it may rise as high as 30 or 40 acres. That the size and strength of the animal has much to do with the area tilled by a pair of oxen, is well brought out by the taluk figures given in the Statistical Atlas for Madras (1936). In the rice growing areas of the south, such as Chingleput, South Arcot, Tanjore and Tinnevelly, with few exceptions, the taluk figures nearly conform to the 6 acres mentioned by Sampson. In these localities the bulk of plough cattle belong to inferior breeds. But in Kistna and Guntur and also in Nellore where heavier cattle are available in larger numbers, the figure is higher, the average district figure being 8 in Kistna, 10·9 in Nellore and 14 in Guntur. In some of the taluks of Guntur and Nellore still higher figures

2. A Brief Survey of Madras Livestock.

are reached, 16 and 17 and even 19 acres. The difference is seen in dry cultivation also when we compare the Ceded districts with Coimbatore or with Ramnad where also dry cultivation abounds. In Kurnool the average is 19, in Bellary in the eastern taluks it ranges between 21 and 32 and in the western taluks between 12 and 18, in Anantapur the average is 14 and in Cuddapah it is 13. Contrasted with these are the figures for Coimbatore where the average is about 10 and never rises higher than 13 in dry cultivation, and for Ramnad where also the average is about 10. In some districts, notably South Kanara and to a less extent Chittoor and Chingleput, the average area tilled by a pair goes down as low as 2 to 3 acres. In Chittoor this is perhaps due to the wider prevalence of garden cultivation, but in South Kanara the reason most probably is the low vitality of the animals and the intensive method of cultivation adopted.

*Cattle Labour in Tanjore, Lyalpur and Egypt — A Comparison*: That the average area tilled by a pair can be improved by the substitution of better breeds for the country breeds now existing in many parts of the State is remarkably brought out by the comparison instituted by the Royal Commission on Agriculture between Tanjore in Madras and Lyalpur in the Punjab.[3] Both in the net area sown and in the area irrigated Lyalpur records higher figures, and yet bullocks and male buffaloes are 28 and 4 respectively for Tanjore and only 13 and 1 respectively for Lyalpur. This unmistakably shows how much more work by way of tillage can be expected of the superior breeds. The better breeds of Madras compare very favourably with the breeds of the Punjab, the Hariana or the Sahiwal, and so there can be no reason why as good results should not be obtained in Madras as are secured in the Punjab. In the opinion of the Commission the standard attained in Lyalpur is the best that has been attained in India. Yet it lags far behind the standard of Gharbieh in Egypt to which the Commission has drawn pointed attention. It shows to what extent there is still scope in India for reducing the number of work animals on the farms without reducing the standard of cultivation.

*Unused Bullocks and Buffaloes*: The number of cattle maintained on Madras farms is increased to a certain extent, with consequent pressure on the fodder supply, by the existence of unused bullocks and buffaloes. They are unused ostensibly because they

3. Report, p. 185, table.

are past the age of work or are in some way deformed or crippled. In the whole State there are very nearly half a million of such cattle, 360,000 bullocks and 110,000 male buffaloes. Their distribution in the districts is not however even. Some districts such as Vizagapatam, South Arcot, N. Arcot, Salem, Coimbatore, East Godavari, Chingleput and Chittoor have appreciable numbers of these, in every case exceeding twenty thousand, and in the case of Vizagapatam and Salem exceeding fifty thousand. The actual distribution by districts is given in the table on pages 24-25. These numbers are not alarmingly large, but in a context of insufficient fodder supply there can be no reason for maintaining them at all. The only benefit derived by the farmers from such cattle is the dung they yield, and an individual farmer may find that this is a sheer gain to him as the animals concerned are generally left to shift for themselves. But from the community's point of view, however, the subsistence which they eke out for themselves means so much reduction in the fodder left over for more useful cattle, and so involves a cost against which the value of the manure they yield must be set off. If on balance it is found that the accruing value is higher than or equal to the cost involved, cost interpreted as opportunity cost, there can be no harm in continuing the practice. Still as such neglected animals usually exist at a very low standard of vitality, they are peculiarly liable to infection from cattle pests and present extremely vulnerable points in the cattle population of an area. If this risk is computed in terms of money and added to the other costs involved in their maintenance, it hardly seems likely that their existence will be found to be a source of gain. Here also sentiment may be seen to play an important role, and the only way to make it non-effective would be to set propaganda and education against it.

*Demand for Cattle Labour — Existing and Prospective* : The foregoing account of the existing state of affairs has made it abundantly clear that the demand for work animals in this state is inordinately high and works out to a rate of one animal for every 4·6 acres. The total number of work animals is a little over 8 million for a gross area sown in 1944-45 of 37 million acres. Numerically, only two other States in India, viz., United Provinces and Bengal, exceed the figure for Madras, but when the total number of animals is related to the gross area sown, certain other States too, such as, Assam and Bihar are seen to be worse off than this State. The table on page 31 shows the number of animals, cattle and buffaloes, used for work together with the gross area sown in the provinces of British India.

TABLE V

*Working Animals in the Provinces of British India*

*Census of 1940*

| | Working bullocks | Working cows | Total working cattle | Working male buffaloes | Working female buffaloes | Total working buffaloes | Total work animals | Gross area sown 1937-38 | Acreage worked by an animal |
|---|---|---|---|---|---|---|---|---|---|
| Assam .. | 1875837 | 103724 | 1979561 | 178843 | 37291 | 216134 | 2195695 | 7071537 | 3·4 |
| Bengal .. | 7448891 | 855912 | 8304803 | 631317 | 64359 | 695676 | 9000479 | 29719600 | 3·3 |
| Bihar .. | 5158608 | 628511 | 5787110 | 455277 | 201100 | 656377 | 6443496 | 23810000 | 3·7 |
| Bombay .. | 3093006 | 11690 | 3104696 | 168644 | 11942 | 180586 | 3285282 | 29683624 | 9·0 |
| C. P. and Berar .. | 4058312 | 41616 | 4099928 | 523062 | 5946 | 529008 | 4628936 | 27285094 | 6·0 |
| Madras .. | 5709157 | 502222 | 6211379 | 958389 | 65027 | 1023416 | 7234795 | 36919071 | 5·1 |
| N. W. F. Province .. | 345342 | 28095 | 373437 | 13374 | 2806 | 16180 | 389617 | 2519426 | 6·4 |
| Punjab .. | 3934298 | 158236 | 4092534 | 470833 | 171324 | 642157 | 4734691 | 31572607 | 6·7 |
| Sind .. | 598734 | 9924 | 608658 | 2171 | 5835 | 8006 | 616664 | 5712487 | 9·5 |
| Orissa .. | — | — | — | — | — | — | — | 6982795 | — |
| United Provinces .. | 9971462 | — | 9971462 | 828304 | — | 828304 | 10799766 | 44771706 | 4·1 |

If the Punjab can be taken as the standard, there is undoubtedly the need for improving the state of affairs in Madras. But immediately however the fundamental conditions can hardly be changed sufficiently to appreciably alter the demand for bullocks. That demand is likely to remain high and possibly increase with an extension or greater intensification of cultivation. During the war period, and especially after the inauguration of the Grow More Food Campaign, in many localities of the State, scarcity of bullock labour was perceived as a real hindrance to the vigourous pursuit of the Campaign, and in the post-war period, with the urgent need for an expansion of agricultural activity, that scarcity is likely to be seen in increasing measure. The diversion of work animals for military and urban transport was sufficient to cause this scarcity which undoubtedly goes to prove what slender reserves of animal power we have in the State.

While the existing supply is hardly sufficient to meet existing demand, the future prospects too are likely to be those of maladjustment. The young stock available at present do not appear to be sufficient for purposes of replacement. For the State as a whole the total number of young stock below three years of age, of cattle and buffaloes together, amounts to only 32% of the total of animals now working. For annual replacement therefore there will be just about 10% available, not providing for mortality among them. Whether this will be sufficient or not is a little difficult to say, for no clear idea of the replacement demand can at present be obtained. Uncertainty is caused by fluctuation in the rate of mortality among working cattle (including slaughter) and the extreme variation in the duration of working life among different breeds. Mortality from diseases seems to be somewhere about 1%, but superannuation levies a much heavier toll. If the assumption of the Royal Commission on Agriculture [4] is to be accepted, the average working life of a bullock in India is about 10 years, and so through superannuation there will be a loss of about 10%. If to this, the one percent rate of mortality is added, replacement demand will come to about 11% of existing supply. This percentage accords closely with the opinion expressed by the Commission that the replacement demand coming from 20 animals working on 100 acres would roughly be for 7 young stock. Even in 1928 when the Commission reported, the situation was found difficult, as the available number amounted to only 5 or 6.[5] This conclusion re-

4. Report, p. 183.
5. Report, p. 183.

ceived practically corroboration from the evidence tendered by many witnesses examined by the Commission, that scarcity of work animals in many parts of India tended to raise the price of working bullocks. This partly accounts for the widely prevalent practice among small holders of hiring ploughs and bullocks during the ploughing season. The high price and their general poverty make ownership out of the question.

The average working life of ten years assumed by the Commission is a rough approximation for the whole of India, and is perhaps a correct estimate. But whether it is readily applicable to Madras is problematic. In the opinion of H. C. Sampson[6] though local cattle, Nattumadu, have a working life of 10 to 12 years, Malaimadu, principally the Alambadi breed largely used in cart work in the State, have a working life of only 6 to 7 years, and some breeds found principally in the Palni taluk of the Madura district, work only for 3 or 4 years. In the Ceded Districts, Ongole cattle work for about 10 to 12 years and the Amirt Mahal breed, wherever it is used, for about 10 or 11 years.[7] It is difficult under such circumstances to make a correct estimate for Madras, and so we have to fall back on the estimate made by the Commission.

Even at that estimate whether there will be enough work animals ready to take the place of decrepit ones every year seems doubtful. In some districts, such as Chingleput, South Arcot, North Arcot, Salem (in spite of the fact it is a breeding centre), Trichinopoly, Tanjore, Madura, Ramnad, Tinnevelly and South Kanara, ten districts in all, the percentage that male young stock under three (cattle and buffaloes) bear to total work animals is below 30, in N. Arcot going as far low as 18%. Higher percentages are however seen in Kistna and Guntur, in Nellore, in East and West Godavari, in Kurnool, Cuddapah and Coimbatore. The table on pages 24-25 gives these percentages for all the districts separately for cattle and buffaloes and the total.

In addition to young stock maturing every year there are a few other sources of supply too, such as, the castration of breeding bulls after they are past the age of breeding and importation of adult bullocks principally from Mysore. The total number of breeding bulls for the State amounted in 1944 to 91,000, 20% of which

6. A Brief Survey of Madras Livestock.
7. Cattle of Southern India by Lt. Col. W. D. Gunn. Bulletin No. 60, Department of Agriculture, Madras.

may be said to be thus available for work, for the breeding period is roughly between the ages of 5 and 10. This will mean an addition of about 18,200, not an appreciable figure to the 800,000 attaining maturity every year. Figures for imports not being available, it is not possible to say by how much numbers will be swelled that way. Taking all things into account, it is fairly clear that in the near future, procurement of sufficient numbers for work on the farms will be increasingly difficult and will doubtless act as a real restriction on agricultural expansion.

*Remedial Action*: For this state of affairs, increase of the bovine population is not the only or the most desirable action. With our farms already over-stocked with cattle of all description, an increase can have only the result of a further deterioration in the position. A better course would be to improve the health and strength and working qualities of the animals and reduce the demand for mere numbers. This can be achieved by following the twin objectives of 'better feeding and better breeding.'

At the present time a most important cause of the low strength and vitality of the work animals is inadequate and unscientific feeding. The only feeds available to them are dry roughage, natural grasses from pastures, concentrated feeds and green fodder crops. Dry roughage is available in plenty in the shape of straw and stalks, and working bulls on the farm get the lion's share of anything available. But of natural grasses they get little, and in the shape of concentrated feeds almost nothing at all. The summer months are the most trying period for cattle, for then, barring dry straw, no fodder is available. To increase the fodder supply and make it available throughout the year is the problem to be solved.

The Provincial Fodder and Grazing Committee have estimated the available quantity of dry roughage at 21,645,600 tons which distributed among cattle give a per animal share of about 2016 lbs. per year or 5·5 lbs. per day. The share of the working bullocks being larger than that of cows or young stock, ample provision of dry fodder can easily be postulated for them. Still there are regions characterized by the Committee as scarcity and deficit areas where even dry roughage is found to be inadequate for all the animals stocked. Some portions of the Circars and Malabar come in the first category, while other portions of the Circars, Nellore and parts of North Arcot come in the second category. These are faced with acute fodder famine during years of drought, and cattle die by the thousand from sheer want of the barest fodder. Mr. S. Y.

Krishnaswami [8] has estimated that scarcity and deficit areas would cover nearly half the State, involving half the cattle population. Even in the other areas classed as areas of satisfactory ration, in years of drought or crop failures shortages may be experienced.

As regards grazing, the only facilities available are the communal grazings in the villages and forest grazing in Government forests. These grazings are estimated to yield natural grasses of the weight of 7,900,800 tons. Communal grazings are usually overstacked with cattle and hardly an opportunity is given for grass to grow even during the season to any height. It is estimated that there are nearly 65 acres of uncultivated waste and current fallow to every 100 acres of cultivated land available for grazing [9] but much of this is rendered useless as pasture by the fact that grass grows on it only during a short period of the year, and during that period, if not properly used, it grows to such a height as to become altogether unpalatable to cattle. The grass which goes to waste thus, if cut at the proper time and converted into hay or ensilage, will be available for use later in the year when fodder shortage appears, but unfortunately the agriculturists of Madras are unfamiliar with hay making and are too busy on the cultivated land at the time to give any attention to it.

Forest grazings are in the reserved forests thrown open to grazing either throughout the year or during certain months in summer. They form a considerable area at present and afford grazing facilities for 1½ million cattle annually. Nearly 1/6 of the forest area is under panchayat management where grazing is unrestricted, and this area serves as pasture for ¾ million animals, exclusive of the 1½ million grazing on the reserved forests. In the grazing lands in reserved forests the incidence as worked out by Mr. S. Y. Krishnaswami [10] is 6 acres to a cow unit and in panchayat forests, 2·8 acres.

Grazing in forests is regulated under four systems, the Permit system, the Village system, the Kancha system and the Panchayat system. Under the first, permits are issued ordinarily at rates varying from 1½ annas to 8 annas per cow unit tenable for a year, to cattle owners which entitles them to use the forest areas for grazing their cattle. The village system includes two variations, the forest village system and the hill village system. Under the forest system a delimited area is handed over to a panchayat for regulation

8. Rural Problems in Madras, p. 198.
9. S. Y. Krishnaswami, Rural Problems in Madras, p. 191.
10. *Ibid*, p. 194.

of grazing with powers to limit the cattle grazed and charge a fee, but with the obligation to protect the forest from theft and fire. To reimburse them for the expenses involved, they are allowed a rebate of 50% of the fees charged. The hill system differs from the forest system only in the matter of rebate allowed, the rebate here being the full amount of the fees collected. Under the Kancha system specified areas are auctioned out to bidders, for one or more years, for use as pasture under stipulated conditions. Under the Panchayat system forest areas are leased on a fixed rental to panchayats which work under the supervision of the Revenue Department.

Under all these systems grazing is permitted over the whole area thrown open in forests, hardly any attempt being made to introduce a proper system of rotation in grazing. The result, as the Royal Commission on Agriculture have stated, is that the areas near the villages get intensively used, while the more distant areas remain altogether unexploited. Reform therefore has to be directed to a fuller and more economical utilization of the natural grasses in forest areas.

The production of concentrated feeds in the State has been estimated by the Provincial Fodder and Grazing Committee at 1,918,000 tons. Distributed over the entire cattle population, they yield about ½ lb. per day of feeding stuff per head, just two-thirds of the minimum requirement. These feeds comprise oil cakes, rice bran, cotton seed, some pulses and by-products from pulses. They are important constituents of the fodder of young stock, milch cows and work animals, as they provide the proteins needed for growth and strength. The production of some of these will increase with increased production of cereals and pulses and the development of the oil mill industry to crush within the State all the oilseeds grown here. The 50% increase in these feeds is a target within the possibility of achievement, if the proper policy in the matter of growing human foods is pursued.

The total production of green fodder crops has been estimated by the same Committee at 3,341,700 tons. The acreage under fodder crops has been steadily rising since 1910, but while the tendency has been rather striking in India as a whole during the last decade, it has been too slight in Madras to be perceptible during the same period. Fodder crops have a higher nutritive value than cereal straw or dry roughage of other kinds, with the exception of cholam straw, and should, to a certain extent, replace straw as the nutritive constituent of cattle feed. While straw has a nutritive ratio of only 1:40, nutritive grasses like Guinea grass,

Napier grass and Rodehs grass, recently introduced into cultivation, have ratios of 1:12 and 1:10. The leguminous fodders such as Lucerne and Berseem have still higher ratios, of 1:4 and 1:6. Recently the Government have inaugurated a three-year scheme of research at Coimbatore and Bapatla on grasses and forage crops to discover the best crops that may be grown. But for the larger production of these fodders larger acreages will have to be devoted to them, with consequent fall in the acreages under other crops, and this will undoubtedly raise both a social and an individual problem. For society it may mean a choice between cattle and human food, and for the individual cultivator, the small holder, a choice between a subsistence or money crop and fodder for his cattle. Extension of cultivation into the cultivable waste or current fallows and the introduction of a system of mixed farming would however properly assail this dilemma.

*Better Breeding*: Inferior working qualities of the animals is partly also due to the low breeds to which the majority of them belong. Promiscuous interbreeding largely prevalent even in those tracts where superior animals exist, cause a steady deterioration in quality. This should be prevented by better stock management, the castration of the nondescript and defective bulls and the larger provision of approved stud bulls in localities where indigenous breeds abound. Existing breeding practice in many parts of the State is to get the cows served by Brahmini or Nadudana bulls rarely selected on the basis of quality. These bulls roam all over the village, freely mix with the village herds and give rise to degenerate offspring. Indiscriminate breeding, which is the result, is often due to the absence of approved bulls, for, as is seen in the Kangayam tract and in Tanjore where superior bulls are available, the villages take care to get their cows covered by them. Among private breeders and well-to-do ryots, special care is bestowed on the selection of the bull, but the large majority of small holders have to be content with whatever service is readily available..

Mr. S. Y. Krishnaswami[11] has estimated that at the rate of one approved bull for 100 cows, 50,295 bulls would be required, and for servicing the she-buffaloes, 29,146 bull-buffaloes. The number of approved bulls at stud in 1935-36 was only 181 in the State[12] but by 1944-45 they had increased to 720.[13] Buffalo bulls

11. Rural Problems in Madras, p. 203.
12. N. C. Wright, Report on the Development of the Cattle and Dairy Industries of India, Table 24, p. 167.
13. Rural Problems in Madras, p. 203.

in 1944-45 were only 241. Since in the opinion of experts[14] breeding under Government control alone will yield the desired results, the need is imperative for increasing the number of stud bulls and making their services available at Government farms. At present breeding bulls are maintained at Government farms, veterinary institutions and jails. In this connection, the possibilities of artificial insemination should be explored. It has been estimated that through such a process the service rendered by a stud bull may be increased ten fold and thus the number of stud bulls required correspondingly reduced.[15]

But whatever Government may by themselves do in the matter, private breeders, breed associations and local bodies too should undertake the task, if indiscriminate breeding is to be effectively stopped. With this in view the Madras Government have introduced three schemes for the wider distribution of approved bulls, the Premium Scheme, the Grant Scheme and distribution through the Veterinary Department. Under the Premium Scheme private individuals and institutions are encouraged to maintain approved bulls for the maintenance and service of which the Government paid Rs. 100 per annum originally, but recently have raised the figure to Rs. 160 per annum in the first year and Rs. 150 per annum in the second and third years. For superior breeds of bulls and for buffaloes an additional sum of Rs. 10 is paid. The conditions attached to the grant are that the bull must be properly fed, the stipulated number of services should be given and that it should be stationed at the same place for a period not exceeding five years.

Under the Grant Scheme the Government make a consolidated grant to District Boards to cover roughly half the cost of purchasing bulls. The bulls are distributed among interested ryots, panchayat boards and co-operative societies, as loans for three years, after which they become the property of the care-takers. During the three years they have to be maintained at their expense and serviced at least 60 times a year. With fees charged for service the maintenance expenses could be met. The District Boards of Coimbatore, Tanjore, Chingleput, North Arcot, South Arcot, Trichinopoly, Nellore and Bellary, have all taken advantage of this scheme.

14. Note on Livestock Improvement in India by Col. A. Olver, submitted to the Cattle Conference, 1937.

15. Eastern Economist, 3rd December, 1948, p. 976 — India's Cattle Wealth.

Under the third scheme, the Veterinary Department purchases young bulls of superior breeds such as the Kangayam, Scindhi, Ongole and Hallikar, and Murrah buffaloes and distributes them to select breeders immediately or after rearing them for about 1½ years. The breeders have to rear them till maturity, for meeting the expenses of which a subsidy of Rs. 50 per annum is given to them. The Government are providing a sum of Rs. 20,000 annually for this purpose.

In addition to these schemes, attempts are being made to form breed associations for the superior breeds of cattle and to build up a Livestock Improvement Fund. In pursuance of this policy, a Kangayam Cattle Breeding and Marketing Co-operative Society has been formed at Coimbatore for the Kangayam breed, but for the other superior breeds the matter is still in the proposal stage. A Livestock Improvement Fund has been started with an annual Government contribution of Rs. 23,000 to be supplemented by private donations and other contributions. But so far the response from the public has been very meagre.

To eliminate the scrub bull and to license all bulls at stud, the Livestock Improvement Act was passed in 1940. Under the provisions of this enactment every owner of a bull is required under pain of penalty either to castrate it or take out a licence for it. Licences will be granted without a fee if the bull is approved for stud purposes. The enforcement of the Act has to be notified, and the Government policy in the matter has been to provide a sufficient number of approved bulls before enforcing the Act. At present in the Kangayam tract and in the Periakulam taluk of Madura District, the Act is in force.

As a result of all these measures some progress has been made in the right direction, but a forward policy in stock improvement waits upon an enthusiastic response in the villagers themselves. This has to be enlisted by official propaganda ably assisted by non-official agencies of the type of the Livestock Improvement Association of South Kanara.

## CHAPTER IV

# IMPLEMENTS AND MACHINERY

Very little information is available regarding the stock of implements and machines that Madras farms have. The quinquennial census taken is usually confined to an enumeration of the more important implements such as ploughs, carts, sugarcane crushers, oil engines, tractors, etc., and neglect the minor instruments of husbandry. In most small farms, however, the only implement that the farmer can boast of is the plough, and it may be mainly because of the rarity of the other implements that they have been omitted from the enumeration. Even the smallest cultivators however are likely to have a sickle or a scythe for harvesting, a bill-hook, an axe, and a crowbar, a wooden levelling implement and a spade as accompaniments of the plough. The insignificance of these implements and the trouble involved in enumerating them perhaps led to their omission. Other implements are not usually seen on the farms of this State. This is practically confirmed by the Resurvey of Some South Indian Villages conducted by the Department of Economics of the Madras University. Out of the nine villages thus resurveyed in 1936-37 only one village, Vadamalaipuram, in the Ramnad District, had the seed drill and only two at that for the whole village of over 1000 acres of cultivated land.

But from the information available it is seen that there were in the State in 1944, the year of the Census, 3·8 million wooden ploughs and 52,000 iron ploughs. The iron ploughs are very unevenly distributed among the districts. The Circars and the West Coast have insignificant numbers, while the highest number is possessed by Tanjore, with Salem and Bellary coming second and third. Chittoor, South Arcot, Ramnad and Vizagapatam too have considerable numbers. Looking at the figures alone, one is led to think that their popularity is greater in the Tamil than in the Telugu area or the West Coast. The nature of the soil or the strength of the animals cannot be the determining factor here, for it is just in those areas where superior breeds of cattle generally abound that lower figures for the iron plough are seen. The reason has to be sought elsewhere, and perhaps is seen in the less progressive nature of the cultivators of those areas. Whether the landlord system of land tenure prevalent in the Circars and in Malabar has anything to do with this unprogressive attitude in the cultivators is too large a question to be tackled here.

The larger numbers owned do not however indicate that all of them are used. In the resurvey of the villages to which reference has been made above, it was seen that the iron ploughs in existence in many of them were hardly used in actual cultivation. Animal power available could not cope with the work, or the village craftsmen could not carry out the necessary repairs. Granting, however, that all of them are in use, the number bears no significant proportion to the gross area cultivated in the State. It is now nearly quarter of a century since the iron plough was initiated into Indian agriculture, and the number actually used on the farms is hardly a tribute to the efficacy of the work of propaganda carried out by the Department of Agriculture. In those areas where heavier animals are used as draught cattle there is undoubtedly scope for an extended use of this implement. Both in the Circars and in the Ceded Districts conditions are comparatively more favourable, and through intensive propaganda, accompanied by loans of money or instalment selling, it would be possible to popularize it. In the black cotton area of the Ceded Districts where conditions are almost similar to those obtaining in Central Deccan in Bombay, there is the chance of replacing the wooden plough by the iron one, as has already happened in the latter locality.[1] The Meston plough which is one of India's standardized light ploughs, would not be too much for the animals of the area, and the cost being not prohibitive, (in the pre-war period it was not higher than Rs. 7) its introduction cannot be very difficult. Already in Bellary many improved varieties, such as Swedish ploughs, black cotton soil ploughs, No. 1 and 2, and Kirloskar heavy ploughs are used in the black cotton tract, but the other three districts of the area somehow lag behind. More recently cheaper varieties of the iron plough have been manufactured by P. S. G. & Sons, Coimbatore, P. S. G. 16-A and 16-B, and sold at a price not exceeding Rs. 3-12. Even these have not become as popular as one would wish.

The distribution of wooden ploughs in the districts does not seem to have much of a relation either with the gross area or the net area sown. Nor can any striking correlation be seen between their number and the extent of wet or dry cultivation. In the driest region of the State, however, the Ceded Districts, the number is significantly less than in other parts, and so also in Coimbatore which had in 1944-45 the largest gross area sown in the State. Dry cultivation as such may not have any noticeable effect, but since in dry areas average holdings are likely to be larger than in

1. W. Burns: Progress of Agricultural Science in India, p. 26.

wet areas, a reduced number of ploughs may be expected. On *a priori* grounds it may be asserted that the number of ploughs and other implements of agriculture have a direct dependence on the number of holdings, each holding tending to have its own complement of equipment. In regions of extreme poverty and minute sub-division of holdings and cultivation, the practice of hiring ploughs and oxen during the ploughing season may get so well-established, that an appreciable reduction in the number of ploughs may quite be the result. Such practices originate from the economic impossibility or undesirability of maintaining cattle rather than from the prohibitive cost of the plough. The wooden plough in the pre-war days never used to cost more than Rs. 2 or 3, complete with shaft, yoke, etc., and the replacement of the share, not more than annas 4 to 8. They are as a rule manufactured and repaired in the village itself. In garden cultivation the need for the plough is obviated, the spade replacing the plough, and in such areas too a low figure is not surprising. Malabar, Coimbatore and Chittoor fall into this category.

The distribution of ploughs among the different districts is thus important as a rough index of the number of holdings, and taken along with the net area sown, will give an approximate idea of the average size of the holdings. Exclusive reliance cannot of course be placed on this computation for reasons which would have become obvious by now. The table on pages 44-45 gives the distribution of agricultural machinery in the State by districts according to the Census of 1944.

*Other Implements*: Some of the other implements used in certain localities are the seed drill, the guntaka, the papadam and the mhote wheel. The seed drill, called the Gorru, is in common use in Kistna, Kurnool, Nellore and Ramnad. Small grains are usually set in the soil with the aid of the drill, while in Ramnad it is used even for sowing cotton and cumbu. Guntakas or blade harrows have become fairly popular in Kistna and also in Anantapur where they are used for harvesting groundnut. In Nellore the same implement is used for tearing up weeds and breaking clods. Another implement frequently met with on the farms of Kistna and Nellore is the Papadam (Papatum) or bullock hoe. Improved varieties of Indian made mhote wheels also are tending to be introduced in larger numbers in place of wooden wheels in Kistna and Anantapur.

Agricultural engineering which has come to have a recognized place in most of the States of India, has already designed many

new implements suitable for Indian conditions and within the financial capacity of many Indian farmers, but unfortunately the response evoked so far has been very disheartening. As early as 1922-23 the Mysore Agricultural Department put a new steel bar suited to the ordinary cattle plough on the market, and the workshop attached to the Agricultural School at Travancore designed an improved type of iron plough. From these were evolved the Meston Plough which is light and standardized and suited to Indian conditions. Subsequently many new implements have been placed on the market by engineering firms manufacturing to the specifications of the engineering sections of the Agricultural Departments. The reversible blade hoe and grubber, clod crushers, transplanting machines, the cultivator and ridging plough, winnowers, scoopers, cultivators, chaff-cutters, cotton plant pullers, paddy puddler, disc trampler, the levelling board, the bund former, grading machine, turmeric polisher, etc. are some of those improved implements. Side by side with this activity many firms have placed on the Indian market iron ploughs and tillage implements embodying Western principles adapted to Indian conditions. No information is available as to how many of them are in actual use.

*Tractors*: Table VI shows that there were in 1944 in the State 9,618 tractors the bulk of which were confined to the districts of South Arcot, Chittoor, Cuddapah and N. Arcot. Mechanical ploughing started in India only in 1912-13 with the steam plough, and later on with the tractor.[2] Tractors gained in popularity with the experiments conducted by the Burmah-Shell Company for a series of years in tractor ploughing. Their use is however limited to individuals and companies owning or working large tracts of land and to contractors undertaking deep ploughing for the eradication of weeds. The larger landholders of this State have not become progressive enough to adopt mechanical methods, and companies owning large tracts are generally confined to the plantations on hilly regions. To an individual farmer the use of the tractor becomes economical only if he uses it in general farming with all the processes mechanized. Very few in India have reached that stage of development, and that mainly accounts for the small number of tractors in use. Deep ploughing is occasionally required in weed infested areas, but it would be uneconomical to maintain a tractor for that purpose alone, unless the owner, after finishing the work on his own farm undertakes contract work on other farms. In certain regions of India, principally Central Provinces and to the

2. W. Burns: Progress of Agricultural Science in India.

TABLE

*Madras*

Agricultural Machinery,

| District | Ploughs | | Carts | Sugarcane Crushers | |
|---|---|---|---|---|---|
| | Wooden | Iron | | Worked by power | Worked by bullocks |
| Vizagapatam .. | 52462 | 2586 | 21340 | 40 | 7363 |
| E. Godavari .. | 194547 | 72 | 60519 | 20 | 1938 |
| W. Godavari .. | 175252 | 92 | 49898 | 8 | 577 |
| Kistna .. | 102413 | 211 | 65598 | 1 | 5 |
| Guntur .. | 123928 | 57 | 100401 | 18 | 145 |
| Kurnool .. | 89941 | 836 | 55847 | 2 | 118 |
| Bellary .. | 84636 | 6326 | 41410 | 48 | 793 |
| Anantapur .. | 122808 | 1568 | 49719 | 3 | 343 |
| Cuddapah .. | 86223 | 888 | 40372 | 3 | 113 |
| Nellore .. | 141189 | 395 | 56958 | 2 | 24 |
| Chingleput .. | 163557 | 2647 | 44832 | 42 | 52 |
| S. Arcot .. | 281191 | 4030 | 53411 | 20 | 1875 |
| Chittoor .. | 174047 | 4860 | 30367 | 25 | 3754 |
| N. Arcot .. | 251978 | 2277 | 40249 | 50 | 1907 |
| Salem .. | 322894 | 6493 | 66653 | 95 | 1246 |
| Coimbatore .. | 192730 | 1838 | 101970 | 742 | 751 |
| Trichinopoly .. | 265974 | 1036 | 48079 | 68 | 2043 |
| Tanjore .. | 258491 | 9198 | 78096 | 6 | 229 |
| Madura .. | 209655 | 1524 | 47969 | 8 | 667 |
| Ramnad .. | 173058 | 2867 | 48010 | 494 | 78 |
| Tinnevelly .. | 112161 | 1604 | 55175 | 3 | 21 |
| Malabar .. | 186371 | 490 | 13778 | 11 | 414 |
| S. Kanara .. | 284328 | 248 | 6741 | 67 | 957 |
| The Nilgiris .. | 2418 | 39 | 374 | — | — |
| Madras .. | 73 | 2 | 1047 | — | 3 |
| The State .. | 3878868 | 52184 | 1179013 | 1776 | 25506 |

VI

*State*

Census of 1944

| Oil engines with pumps for irrigation | Electric pumps for tube wells | Tractors | Boats | Indigo vats | Oil mills | Looms |
|---|---|---|---|---|---|---|
| 32 | 419 | 154 | 2294 | 5 | 5335 | 18548 |
| 84 | 9 | 1 | 5502 | 55 | 1920 | 16671 |
| 69 | 8 | 101 | 1373 | 26 | 1029 | 6741 |
| 331 | 125 | 12 | 1728 | 443 | 218 | 7417 |
| 119 | 134 | 317 | 616 | 1521 | 220 | 26002 |
| 34 | 3 | 3 | 10 | 373 | 255 | 11089 |
| 86 | 4 | 18 | 39 | 44 | 199 | 13345 |
| 49 | — | 13 | 1 | 321 | 560 | 13866 |
| 27 | 10 | 1070 | 6 | 1321 | 620 | 18647 |
| 75 | 3 | — | 633 | 1657 | 516 | 14719 |
| 659 | 98 | 12 | 1270 | 668 | 873 | 34784 |
| 630 | 297 | 5445 | 433 | 595 | 2842 | 17785 |
| 110 | 97 | 1272 | 1 | 704 | 2510 | 14025 |
| 196 | 263 | 1030 | 7 | 343 | 3409 | 35045 |
| 100 | 389 | 2 | 247 | 41 | 2203 | 66306 |
| 684 | 1763 | 27 | 154 | 86 | 1821 | 38181 |
| 73 | 83 | 20 | 104 | 76 | 1670 | 12826 |
| 85 | 82 | 25 | 1032 | 332 | 1768 | 10961 |
| 64 | 152 | 21 | 72 | 319 | 1150 | 44066 |
| 63 | 173 | 3 | 359 | 83 | 901 | 16958 |
| 53 | 81 | 1 | 1182 | 99 | 1008 | 32139 |
| 5 | 56 | 71 | 7940 | 1 | 1009 | 15772 |
| 27 | 37 | — | 7000 | 1 | 770 | 4892 |
| — | 8 | — | 22 | 6 | 1 | 2 |
| 35 | 13 | — | 33 | — | 101 | 2283 |
| 3690 | 4307 | 9618 | 32058 | 9120 | 32908 | 493010 |

north of these provinces, weeds affect vast areas and practically throw them out of cultivation. In Madras the evil is not so widely prevalent, though in the northern and north-eastern parts of the State many areas are thus affected. Weed-infestation is frequently the cause of land being left in fallow, and since this State contains the largest area of current fallows among the States of India, the evil perhaps exists unperceived. The weed however is ubiquitous and exists even in cultivated land in patches, causing a reduction in yield and much damage to crops. The remedy for this is either hand digging with the spade or deep ploughing with the tractor. The farmers of India in their spare time practise the first, but since it is necessarily confined to the weedy patches alone and does not cover the whole field, from the large expense involved, has no appreciable effect on the yield. Deep ploughing with a tractor will do the work in 1/50th of the time taken by hand digging and will, besides, invert the whole soil of the field, causing exposure to the sun and greatly increasing fertility.[3] Though the scope for the general use of the tractor in the farming process is very limited in this country under present conditions, there is undoubtedly greater scope for its use in deep ploughing. The removal of weeds alone will increase both individual and social income in a surprising degree. If, in America, according to an estimate,[4] weeds cost the U.S.A. 300 million dollars annually, the loss to India must be even greater, if account is taken of the land left uncultivated or undeveloped. In this State the paucity of tractors for breaking new land has been singularly felt as an obstacle in the extension of cultivation to the culturable waste or current fallows, under the Grow More Food Campaign, and in the the post-war period when a forward policy in agricultural development is contemplated, this lack will be felt in greater degree. The free service of the tractor allowed to new assignees of land by the Government could not be availed of by many, as the number of tractors owned by the Agricultural Department was only two. Since then the number has increased to 145.

In the future there is need for increasing the number of tractors in the State available for deep ploughing, either through Government purchase or through the formation of joint-stock companies or co-operative societies for doing contract work. On the home farms of big landlords, mechanical methods of tillage may be used

3. C. P. G. Wade: Mechanical Cultivation in India (Imperial Council of Agricultural Research — Monograph No. 9).

4. Ibid.

with advantage, but if the tractor is to be economical as a general purpose machine, the farms should have a minimum size of 200 acres.[5] No information is available as to how many of such farms exist, but their formation through the substitution of owner cultivation for tenant cultivation in zamindari and janmi areas and even in certain ryotwari areas will not be fraught with much serious difficulty. Even small holders occupying contiguous territory have an opportunity of securing the benefits of mechanical methods through the inauguration of co-operative farming.

Though the tractor is indispensable and economical for deep ploughing, its advantage in general farming, absolutely great no doubt, will depend on the availability or otherwise of abundant and cheap labour. When labour is cheap and fairly efficient and can be had for the asking, there will be neither the inducement nor the facility for introducing the tractor. At present no particular locality in the State, except the hilly regions, suffers from a lack of agricultural labour, though during the war period, through recruitment for military and industrial purposes, some difficulty was obviously felt. If this difficulty should continue even after demobilization, as it well may, owing to the disinclination of demobbed personnel to go back to the land, having known a more attractive mode of life, labour shortage itself may present a formidable hindrance to any expansion of agricultural activity under the post-war plans. The only salvation in such circumstances will be placing greater reliance on mechanical methods. An all-round development of the economy according to plan will assuredly make large drafts on labour supply, and since there is the ever present inducement for rural folk to migrate to the towns or industrial centres, agricultural expansion may suffer at the hands of industrial development. In view of the fact that under the four year plans in Germany, labour shortage acted as a real bottleneck, the likelihood of such a development taking place in India should not be dismissed offhand. The absolutely large population of India should be prevented from generating a false sense of security in this matter. Even the largest population, under certain circumstances, may be found inadequate.

*Carts*: The total number of carts in the State was about 1·2 million, according to the Census of 1944. Their distribution by districts is given in the table on pages 44-45. Coimbatore and Guntur have the largest numbers, over a lakh each, and eight other districts,

5. C. P. G. Wade: *op. cit.*

viz., East Godavari, Kistna, Kurnool, Nellore, South Arcot, Salem, Tanjore and Tinnevelly have over fifty thousand each. Excluding the Nilgiris, South Kanara has the lowest number, below, 7,000, and Malabar is only very slightly better off, with about 13,700. No other district, except Vizagapatam and Chittoor, falls below the 40,000 mark. In Vizagapatam the number is 21,000 and in Chittoor 30,000.

This disparity in numbers is doubtless due to many factors, the chief of them being the type of cultivation followed, the surplus of produce available for sale, the size and strength of draught animals, the distances to be covered, the mileage and condition of roads and the existence of alternative modes of transportation, such as, railways and inland waterways. As a rule districts predominantly devoted to commercial crops and surplus areas in grain production will have more need for carts than self-sufficient areas. The peak demand during harvest time is likely to be high, and in order to meet it, a larger number may have to be maintained. The number of carts may be said to vary also with the type of animal used and the condition of the roads. The capacity of the two-wheeled double bullock cart is nearly the same all over the State, but the actual load depends on the strength of the animals used and the state of the roads. The usual load in Madras is about 18 maunds, if the superior Alambadi breed is used, but in short distance traffic inferior breeds and immature animals are used with lighter loads. The distances traversed by carts vary widely, but on the whole work to an average of 20 miles. Distances of 50 and even 60 miles are not however unknown. In the marketing of tobacco in Guntur a fifty mile trek is not uncommon, and in Palghat which is the largest centre for chewing-tobacco in the State, carts have to traverse nearly 60 miles from some localities to reach the central market. Long distance traffic exists between Malabar and Coorg also as a regular phenomenon, and relays of bullocks are used for the purpose.

Ordinarily the larger districts are likely to have a greater number of carts, but it should be noted, that there is no unique correlation between total area, or even net or gross area sown, and the number of carts maintained. This is clearly brought out by the figures. Vizagapatam, which is the largest district in the State, has only 21,000, while Nellore which ranks second in size, has 57,000 and Coimbatore which comes third, has the largest number of carts, 101,000. Nor is there any significant relation with the total mileage of roads. The opinion expressed in the Report on the Marketing

of Wheat[6] that carts are found to be greatest in those areas well-served by roads is not fully borne out by the Madras figures. Nevertheless a rough approximation seems to exist. It is only to be expected that in places of brisk trading activity the total mileage of roads and the number of carts on the road will both be high as consequences of the high demand coming from the trade. Thus in Coimbatore and Tanjore both of which have brisk trade immediately after harvest, Coimbatore as a great producer of commercial crops and Tanjore as a surplus area of rice production, very high figures are recorded for roads and carts. The same remark applies to Salem and South Arcot, but on the other hand Guntur has a very large number of carts with a comparatively low mileage of roads and Malabar has a long mileage of roads with comparatively fewer carts. In the same manner the districts of Chingleput and South Kanara offer striking contrast to each other. These two small districts have disproportionately large mileage of roads; but while Chingleput is well served with carts, South Kanara ranks lowest in the State in this respect. The reason for the latter's low figure is perhaps to be found in the discontinuity of her road mileage caused by lack of bridges over streams and the higher power of the buffaloes used more largely for draught purposes there.

*Sugarcane Crushers*:- The total of sugarcane crushers in the State in 1944 was 27,282, of which 1,776 were worked by power and the rest by bullocks — an increase in the four year period, 1940-44, of about 3,000, of which about 1,200 were power machinery. From 556 in 1940, crushers worked by power increased to 1,776. Very large increases took place in both Coimbatore and Ramnad, from 38 and 12 respectively to 742 and 494. These two districts have evidently embarked on sugar production on an extended scale, for the new crushers are additions to and not replacements of old ones worked by bullocks. Increase in the acreage under sugar crops and the cheap supply of electricity from Pykara have perhaps contributed to this result in Coimbatore, but in Ramnad dependence is obviously placed on imported cane, probably from Tinnevelly, for crushing. A wider use of electricity in the working of agricultural machinery is signified also by the almost doubling of electric pumps for tube wells during the four years, 1940-44. From 2,374 they have increased to 4,307, the principal increases being in Vizagapatam, Coimbatore, Salem, South Arcot, North Arcot, Kistna and Guntur. Pumps worked with the aid of oil engines too have increased in

6. Report on the Marketing of Wheat (Government of India), p. 236.

Kistna, Chingleput and Coimbatore, but the total increase during the period, 1940-44, in the State was no greater than 400, from 3,288 to 3,690. These pumps are used mostly for irrigational purposes, and so will in the future have a tendency to increase by a great deal. With an expansion of hydro-electric generation and the construction of more wells for irrigation, an extended use of the electric pump is only to be expected. What has already been achieved in the United Provinces under the Grid system may be achieved in Madras too with greater facility and cheapness, for this State has in the configuration of its land surface greater opportunities for hydro-electric generation.

# CHAPTER V

## IRRIGATION

One way in which the material or physical basis of agriculture can be improved and the condition of the soil permanently bettered is through the provision of irrigational facilities. Irrigation supplements the water supplied by rainfall and converts otherwise dry areas into wet lands, eminently suited for the cultivation of rice, sugarcane, indigo, etc. Almost any crop can be grown under irrigation, and if judicious watering is practised even the so-called dry crops respond favourably to it. In quite a number of localities in India and elsewhere, irrigation is the most important basis of agriculture, and its failure will spell ruin to many tracts which under it are to-day centres of high culture. Egypt without the irrigational system of the Nile or the Canal Colonies of the Punjab without the Triple Canal System or the wheat lands of Sind without the Lloyd Barrage will all be barren deserts incapable of producing anything green. The conversion of those desert areas into pleasant rice or wheat lands is sufficient testimony to the marvel that irrigation can accomplish.

Most agriculturists of the world have been for ages familiar with the practice of irrigation, and in India some of the existing irrigational works are dated, according to tradition, in the 2nd or 3rd century of our era. The turbulent and discontinuous history of our country could not facilitate steady progress, and though no authentic information exists regarding the history of irrigation in this country till we come to the British times, one thing seems certain, viz., that that history could not have been anything but fitful. With the coming of the British, however, the periodical visits of famine, levying a heavy toll of human lives and suffering, directed early attention to the insecurity from which many localities suffered and urged the need for undertaking the construction of works as a protection against famine. Since then there has been steady development of irrigation in the country as a whole, with some of the states playing the leading role.

The total area thus irrigated in the Madras State from all sources was in 1946-47,[1] as given in the Season and Crop Report,

1. In 1947-48 the area irrigated was lower and so 1946-47 has been taken for study. In 1948-49 also this has been the case.

9·86 million acres, distributed in the districts according to the figures given in column 8 of the Appendix I. Those figures show that Tanjore had the largest acerage under irrigation (·15 million acres), Vizagapatam, West Godavari, East Godavari, Kistna, and Nellore had 895,000, 619,000, 647,000, 682,000 and 617,000 acres respectively. Lowest figures were recorded in Bellary (60,000). Kurnool (111,000), Anantapur (218,000) and Cuddapah (227,000). Other districts had acreages ranging from 300 to 500 thousand acres. The total area irrigated from Government canals was 4·30 million acres.

Here too, as is to be expected, Tanjore, the Godavaris, Kistna and Guntur led. Ramnad, Tinnevelly, Salem, Coimbatore, North Arcot, Chittoor, Chingleput, Cuddapah, Kurnool, Anantapur and Bellary had very low acreages. Tanks which play an important part in the irrigation of the State, accounted for an irrigated area of 3·44 million acres, and the districts where tank irrigation was predominant were Vizagapatam, Chingleput, South Arcot, Ramnad, North Arcot, Nellore, Chittoor and Tinnevelly. (The district-war distribution of this acreage too is given in Appendix I, Column 4). The districts of Madura and Anantapur had about 100,000 acres each under tank irrigation, while in the other districts of the State, acreages were below the 100,000 mark, Bellary, Coimbatore and Guntur having had less than 25,000. Very nearly 1·8 million acres were irrigated from wells, 1·6 million from wells with independent ayacuts and ·2 from wells supplementing other irrigational sources. Well irrigation is prominent in Coimbatore, Salem, North Arcot, Trichinopoly, Nellore, Tinnevelly, Ramnad and Madura. Private channels accounted for an irrigated area of 150,000 and other sources for another 342,000. Most of the private channels were in the district of Vizagapatam and other sources, such as field embankments, pump irrigation, etc., were prominent only in Vizagapatam, East Godavari, Kistna, Coimbatore and Ramnad.

For the State as a whole, 31·8% of the net area sown is under irrigation. The percentage applicable to each district is given in Appendix I, Column 9. Among these districts, Tanjore, West Godavari, Chingleput, East Godavari and Vizagapatam led with 84%, 83%, 79%, 65% and 61% respectively. Only one other district, viz., Kistna, had more than half the net area sown under irrigation, while Nellore, Chittoor, North Arcot, Ramnad and South Arcot had about 40% of the area under irrigation. Bellary had only 3%, Kurnool 6%, Anantapur 11%, Salem 14%, Cuddapah 23% and Trichinopoly 23% of the net area sown. It is clear from

these figures that the Ceded Districts are the most ill-served in the matter of irrigation, and since they are naturally defective in rainfall, they are extremely vulnerable to periodic famines. There is no irrigation worth speaking of in Malabar and South Kanara, obviously because rainfall is heavy and cultivation can depend entirely on the rains. These two districts together with Tanjore, East and West Godavari, Kistna, Guntur, Vizagapatam in the north and Tinnevelly in the south are generally considered secure from famine.[2] Of the other districts Nellore, North Arcot, Chittoor and Salem have suffered periodically from famine, the protection given being inadequate. Nellore and North Arcot contain large areas of zamindari land, in which irrigation works are few and their supply undependable. In these two latter districts, as also in Chingleput where the irrigated area forms nearly 79% of the area cropped, the protected area dwindles down to a fourth of the area irrigated, owing to the nature of the irrigation works, in a year of severe drought. South Arcot and Trichinopoly are less liable to famine, since in both a large area is protected by the Cauvery and Coleroon channels and other works. In Coimbatore, though the rainfall is defective and canal irrigation non-existent, there are many sub-soil springs which are utilized to the fullest extent by the industrious and thrifty population. Well irrigation is largest there, and 72% of the irrigated area is under wells. The development of the Periyar project has given protection to Madura, but in the zamindari tracts of this district and of Ramnad irrigation works are not in a satisfactory condition.

*Post-War Programme of Irrigation*: In 1947 the new Congress Government formulated a new scheme of irrigational works as a major contribution to the Grow More Food drive. The scheme consists of three plans, a five-year or short-term plan of minor irrigational works covering every district of the State, a long-term plan designed to harness the waters of the major rivers and a mid-term plan for utilizing the resources of the minor rivers. There are three hundred projects included in the short-term programme, all of which are expected to be completed by 1952. They cover all the districts, but special emphasis is being given to the Ceded Districts which have lagged behind the others in the matter of irrigational development. The total area expected to be irrigated is a quarter of a million acres of virgin land. The estimated cost of the scheme is Rs. 6 to 7 crores. Nearly 150 of them, at a capital cost of Rs. 2 crores and irrigating an area of

2. Irrigation Commission Report, Part II, Provincial, p. 91.

537,000 acres have already been sanctioned and taken up for execution.

The mid-term plan consists of 25 major irrigation schemes estimated to cost about Rs. 40 crores. The most important of these are the Vamsadhara project for Vizagapatam, the Gandikottah project for Cuddapah, the Rallapad project for Nellore, the Perur project for Anantapur, the Bairarantippa project for Bellary, the Bhavani project for Coimbatore, the Sattanur project for South Arcot, the Malampuzha project for Malabar, the Vaigai project for Madura and the Manimuthar project for Tinnevelly. Of these, the Bhavani project is the largest, estimated to cost about Rs. 9 crores. Work has already started on this, and 10,000 men are every day working on it. Other schemes already sanctioned and at present under progress are the Malampuzha scheme for Malabar, the Mettur canals for Salem and Coimbatore, the Rallapad project for Nellore and the Perur project for Anantapur. The other schemes are in varying stages of investigation.

In the long-term plan are included three giant multi-purpose projects on the Godavari, the Kistna and the Tungabadra. The Tungabadra project is the smallest of these and is estimated to cost Rs. 20 crores of which half will be borne by the Hyderabad Government and the other half by the Madras Government. It has already been taken up and is expected to be completed by 1952. When completed it will supply water to a quarter of a million acres under its low level canal and another quarter of a million under its high canal and generate about 20,0000 K. W. of power. The dam across the river is going to be so constructed as to permit a larger use of water later than is at present contemplated. Immediately the area to be irrigated is only a quarter of a million, one-tenth of which will be under wet cultivation and the rest under dry cultivation. In the Madras State nearly 400,000 acres lying in the districts of Bellary and Kurnool will benefit from the scheme and will be enabled to grow rice and long-stapled cotton. Even dry crops like millets and groundnut will give higher yields if irrigated, and the whole area is expected to be protected from famine as a result of this work.

The Ramapadasagar scheme for the Godavari is the largest of these long-term projects, estimated to cost about Rs. 130 crores. It will, if completed, enable the additional production of a million tons of rice and the generation of 200,000 K. W. of electric power. It will utilize 20% of the waters of the Godavari and benefit agricultural land in five districts, viz., Guntur, Kistna, East Godavari,

West Godavari and Vizagapatam. It will supply water to 2·3 million acres of new land and increase the supply of another 2·1 million acres. The investigation process has been completed, but certain technical and financial difficulties are holding it up. It is estimated that the project will take about 12 years for completion.

On the third scheme also, viz. the Krishna scheme, investigation has started and is expected to be completed in two years.

In addition to these new schemes, remodelling work on old irrigational works too has been going on since 1944, and as a result of it nearly half a million acres of land have been reclaimed. This work is directed to repairing existing channels and drainage systems, removing silt from tank beds and raising the level of bunds and weirs. In the opinion of Mr. O. P. Ramaswami Reddiar, ex-Premier of Madras, through tank restoration work alone, carried out over the 35,000 tanks in existence at a cost of Rs. 19 crores, 5 million acres can be effectively irrigated and food production increased by 4 million tons.[3] At present they exist in disrepair and so do not irrigate all the land registered in their ayacuts. Neglected, they will fast fill up with silt and cease to be sources of irrigation altogether. Their past neglect is attributed partly to the failure of the Kudimaramath system under which the villagers have to collectively keep the tanks and their distribution in good repair, and partly to the disinclination on the part of past governments to undertake the work or spend money on it. To improve the situation, the present Government are contemplating relieving the ryots of their kudimaramath responsibility and levying instead a small acreage fee so that the Government themselves might discharge the responsibility. In the budget for 1949-50 a provision of one crore of rupees was made for this work.

All these schemes together will cost, under present estimates, about Rs. 260 to 270 crores, and the great problem involved in their execution is to find the finance needed. For the execution of the larger schemes, the help of the Central Government in finding finance is essential, and even for the minor schemes, it is very doubtful whether the State, thrown on its own resources, can gather together the requisite money. In sanctioning many of these schemes the Government have departed from the earlier principles and decided on the execution of the works on the basis of the value of the food which will be produced rather than on the direct return to capital investment. This marks the inauguration of a new

3. Article in the 'Mail', August 13, 1949.

policy, for in the past, many schemes were turned down as unremunerative, as the expected returns were considered insufficient to warrant the expenditure. In calculating these returns, not only the money return in the form of increased land revenue, was considered, but also the degree of protection the works offered against famine. Works where the money return, within ten years of completion, would be adequate to cover the working expenses and interest on capital outlay were classed as productive works and were freely and promptly executed. Works unproductive in this respect too were undertaken, if their protective value was considered sufficient to justify their construction. And in calculating this protective value consideration was given not only to the direct protective value, as defined by the Irrigation Commission, but also to the indirect advantages they were expected to confer, such as, increase in the general wealth and prosperity of the community resulting from the increase of produce, the increase in the humidity of the air and the rise in the level of underground water supply, the saving in the loss of revenue from all sources due to the avoidance of famine, prevention of land going out of cultivation, etc., and the incalculable non-economic benefits derived therefrom. According to the criterion laid down by the Irrigation Commission and adopted by the Government, the permissible capital cost per acre on the unproductive works should not exceed the anticipated net revenue for twenty years *plus* the total (direct and indirect) protective value of an irrigated acre. This formula was fairly rigidly applied in the case of unproductive works for which capital accounts were maintained, and those works considered unsatisfactory on the basis of this criterion were turned down. But under the new policy the criterion is greatly liberalized, and wherever it is found that irrigational works will increase the yield, no matter what the cost, they are freely sanctioned. The new principle obviously is that irrigational development benefits the community as a whole and so the general tax-payer, as suggested by the Famine Inquiry Commission,[4] may be made to bear some part of the cost. Nevertheless the Government are contemplating gathering as much finance as possible in the form of a betterment tax from those holders of land whose holding will rise in value as a result of the development of irrigation. New legislation on that behalf is, according to the statement of the P.W.D. Minister,[5] soon to be undertaken.

4. Report, Vol. II, p. 133.

5. Article in the 'Mail', August 15th, 1949, Independence Day Supplement.

While everything possible is being done to multiply state works, private irrigation works too, such as wells, are sought to be increased. The role of the Government here is to give loans or subsidies for the construction of wells by private people and help them with trial borings and soil surveys. In this matter a fairly liberal policy has been followed. Prior to the food crisis of 1942, taccavi loans used to be given for construction of new wells or repair of old ones at the prescribed rate of interest, and many wells were sunk in the early part of the century. This was aided by the availability of small oil engines and cheap hydro-electric power for lifting water and the deliberate policy of Government not to include private improvements in the assessment of land revenue. But owing to the risk involved in well sinking, the insufficient help given by the Industries Department in the matter of borings and the proverbial lethargy of the cultivators, the improvement effected was not very satisfactory. The matter however became urgent with the emergence of the food crisis, and as a part of the programme in the Grow More Food Campaign an Accelerated Wells Scheme has been introduced. Under it a half subsidy loan scheme has been inaugurated for well construction or for repair, the loan being repayable over a period of 20 years. The loans are interest free and the subsidy is shared between the Government of India and the Government of Madras in the ratio of 50, 50. Subsidies paid between 1943-44 and 1948-49 amounted to Rs. 5·07 crores.[6] According to information available the number of wells constructed or repaired by 30th September, 1946 was 26,291 new wells and 14,248 old wells. On that date work was progressing on 33,029 new wells and 14,655 old wells.[7] During the three years 1947-48, 1948-49 and 1949-50, 23,441 wells were completed. The budget provision for 1949-50 was Rs. 1·5 crores, out of which Rs. 90 lakhs were disbursed by November 1949 when a halt was called to the policy on account of financial stringency. The wells sanctioned for the year were 13,644. On the whole about 49,732 new wells have been constructed. There is however a provision of Rs. 1·52 crores under the scheme in the Budget for 1950-51.

*Need for Protection Against Famine* : In spite of the improvements already effected in the State, large tracts still remain exposed to occasional famine. As the Irrigation Commission observed, it is not the region of very low rainfall (below 10 or 12 inches) or the region of abundant and well distributed rainfall that experiences food famine, but the regions standing midway between these two extremes. There are nearly one million square miles of

6. Article by O. P. Ramaswami Reddiar, 'Mail', August 13, 1949.
7. S. Y. Krishnaswami, Rural Problems in Madras, p. 96.

area in India where there is neither an assured rainfall nor irrigation works which give absolute security against the uncertainties of the seasons. In regions of very low rainfall crops cannot be grown except under irrigation, and if in such regions the inhabitants depend upon the food grown in the locality, it is the clearest indication that irrigational facilities exist which give protection to the area. Otherwise pasturing alone will be possible. Even failure of pasturing may cause severe distress to the people, but the famine experienced will not be a food, but rather a fodder, famine. Where, however, rainfall is abundant and well-distributed, immunity from famine is given, but mere abundance alone will not secure it. Even abundant rainfall, if unfavourably distributed, may lead to scarcity or famine. Tracts which have suffered most intensely from famine are not necessarily those where rainfall is most liable to periodical defect, though these have suffered, but also tracts which are usually regarded as immune and where irrigation has been neglected. As a rule, however, regions in which the rainfall is most liable to be in considerable defect from the average are the ones where famines are most frequent, and the injuries from drought in the aggregate greatest. Thus, in the opinion of the Irrigation Commission, the frequency of deficiency in rainfall is the best general index of the need for protection.

On this criterion, a majority of the districts of the State need protection. As already observed in the section on Rainfall, out of the five years, 1940 to 1945, the South-West Monsoon, which is the most important monsoon for the State as a whole, was deficient in about 15 districts for four years, the departure from normal being of the order of 20 to 30%. A 25% decrease is generally considered a dry year and a 40% decrease, a year of severe drought. The damage caused to crops by this deficiency is not altogether made up by the normality and timeliness of the North-East Monsoon, for that monsoon is of insignificant importance to about 15 districts. Nor is that monsoon any more normal than the South-West. The usual trouble with it is excess rather than deficiency,[7a] and those districts, nearly nine in all, which get their larger percipitation during that monsoon, suffer even greater damage from excess than from the deficiency of the earlier monsoon.

The condition of the soil and the sub-soil, the nature of the crop grown, the physical configuration of the locality, the geographical and seasonal distribution of rainfall are all factors which affect

7-a. During the last three years, however, this monsoon has been characterized by abnormal deficiency.

the desirability and practicability of constructing irrigational works, and lack of suitability in any one of these will undoubtedly hinder the progress of irrigation. To these must be added as an important additional factor, the availability of finance. If these are favourable or made favourable the question whether an extension or introduction of irrigation in a particular area is desirable or not will be seen to turn on the willingness of the cultivators to take water and grow a crop which responds to irrigation. In dry areas where dry crops predominate there is usually the lack of a demand for irrigation. The cultivators are unwilling to grow paddy or sugarcane either from the unsuitability of the soil for such crops or from the lack of certain other facilities, and they feel that the dry crops which they have been traditionally cultivating will get all the water required from the scanty and precarious rainfall. Cotton on black soils and some of the kharif millets are said to receive little benefit from irrigation even in a dry year. This view is, according to agricultural experts, a little erroneous, for even dry crops benefit from judicious watering spread over the season of growth, and if such irrigational facilities as will improve dry cultivation are introduced and the farmers educated in the new method, a demand for irrigational water can certainly be invoked. Both from the irrigational department and from the ryots the wrong but persistent idea that irrigation inevitably converts dry into wet cultivation should be dispelled.

The Tungabadra and Bhavani Projects and certain other major schemes which are under construction or consideration will no doubt introduce wet cultivation into the areas commanded by them, but supplementary to them should be developed other schemes suitable for the irrigation of dry crops.

Both in the construction of canals and wells progress seems to be possible here. The topography of the land may not be so favourable for canal construction as in the Punjab and the United Provinces, and in the sinking of wells too greater expense may have to be incurred, yet in select localities conditions may on investigation be found to be as favourable as in the other two States.

*Classification of Works*: State works in India are at present classified into productive and unproductive works. The earlier classification into productive, protective and minor was given up in 1921 and the existing classification adopted. Productive works are those which are expected to yield within ten years after their completion sufficient revenue to cover their working expenses and interest on capital outlay. Works unremunerative on this basis but

for which capital accounts are kept are classed as unproductive. But productive and unproductive works may be financed by loans, but minor works for which capital accounts are not maintained are financed from current revenue. Works with an ayacut of 200 acres or more are administered by the P.W.D., while all other works are under the supervision of Collectors of districts.

*Irrigated Crops*: The total area under the main irrigated crops in 1946-47 came to 11·7 million acres, an area which is greater than the total land area irrigated from all sources. This discrepancy is explained by the fact that the 11·7 million acres is the gross area irrigated, while 9·8 million given in Appendix II is the net area. The gross area includes the area under second crop especially in the deltaic regions of the State. Of this total, 8·8 million were under paddy, 470,000 under cholam, 311,000 under cumbu, 170,000 under ragi, 191,000 under sugarcane, 86,000 under gingelly, 139,000 under groundnut, 4,000 under castor and 20,500 under cotton. District-war figures for the various crops are given in Appendix II.[8] As is to be expected, irrigated acreage under paddy, though spread over the whole State with the exception of Malabar, S. Kanara and the Nilgiris, predominated in the delta districts of Tanjore, West Godavari, East Godavari and Kistna. In South Arcot, Chingleput, Vizagapatam and North Arcot too over half a million acres each were under irrigated paddy. Guntur, Nellore, Madura, Tinnevelly, Trichinopoly and Ramnad did not lag far behind. The Ceded Districts and Chittoor, Coimbatore and Salem had low acreages. For the State as a whole irrigated paddy has recorded a steady increase during the period, 1940-47, i.e., from 7·8 million in 1940-41 to 8·8 in 1946-47. This increase was more or less evenly distributed in all districts, except those districts mentioned earlier where irrigational facilities are scarce. Some diversion of irrigated lands from ragi and cotton, probably as a result of the Grow More Food Campaign, appear to have taken place, about 100,000 acres under each and about 20,000 under sugarcane. The diversion from cotton has been principally in three districts, Coimbatore, Madura and Salem, Coimbatore contributing by far the largest share. But much of the increase in the acreage under paddy is to be attributed to the extension of the area under the second crop.

Of the other foodgrains grown under irrigation, cholam predominated in Coimbatore, Madura, Tinnevelly, Salem and Trichinopoly, cumbu in Nellore, Coimbatore, Salem, Cuddapah and Trichinopoly and ragi in Coimbatore, Anantapur, Nellore, North Arcot,

8. Figures for 1946-47 are studied as the figures for 1947-48 are lower.

South Arcot, Cuddapah, Chittoor and Chingleput. Irrigated area under these three crops was largest in Coimbatore. Gingelly cultivation under irrigation was in the main confined to Vizagapatam and East Godavari and groundnut to South Arcot, Madura and Trichinopoly. Other districts at the most contributed a few thousand acres to each. Vizagapatam, South Arcot and Trichinopoly led in sugarcane cultivation too along with North Arcot and Chittoor.

From this analysis it is clear that there does not appear to be much scope for extending irrigational facilities to the area under unirrigated paddy. Out of the 11 million acres under paddy in the State, nearly 9 million are already irrigated, and out of the remainder, about 1·4 million acres are situated in the districts of Malabar and South Kanara. The other half a million are scattered all over the other districts, probably in non-compact blocks, that any attempt to irrigate them will involve an enormous cost with little showing by way of result. Only in the district of Chingleput is there an acreage of about 100,000 under unirrigated paddy, and if on investigation they are found to lie in more or less compact blocks, some irrigation may be attempted by the provision of storage works.

In the case of the dry grains, however, the irrigated area forms only 17·7% of the total area under those crops — in absolute figures, 1·6 million acres out of a total of about 9 million acres. Nearly 5 million acres of this area are situated in the Ceded Districts and in the districts of Coimbatore, Salem, Trichinopoly, Madura and Ramnad. The completion of the Tungabadra and Bhavani projects may help to convert some part of this acreage situated in the Ceded Districts and Coimbatore into wet lands suited for paddy cultivation or the substitution of irrigated culture in the growing of the dry crops themselves. Similar development, through a fuller utilization of the flow in the existing irrigation works, can take place in East Godavari, Kistna, Guntur, Nellore and Tinnevelly where the total acreage at present under unirrigated dry grains amounts to nearly 1·8 million acres.

These improvements will doubtless have significant effects on the yield. The average normal yield for the State per acre in cholam, cumbu and ragi in unirrigated culture is only 577, 544 and 715 lbs. respectively. If this cultivation is replaced by irrigated paddy, the yield is likely to increase to 1,790 lbs. per acre. This would mean on 1·8 million acres in the deltaic regions and another million in the areas commanded by the Tungabadra and the Bhavani Projects an increased yield of about 1·5 million tons. Even

without a recourse to paddy cultivation, merely by the substitution of irrigated for unirrigated cultivation of the dry grains themselves, the yield may be increased by about 1 million tons of dry grains.[9] This calculation is based on the assumption that the factors which limit the development of irrigation do not operate and that the cultivators will respond in the required measure.

Other crops too will respond in the same manner to irrigation. Cotton yield per acre, for instance, can be raised from 78 lbs. per acre to about 286 lbs. through the substitution of irrigated for unirrigated cultivation. For groundnut, gingelly, castor, etc., the relevent figures are not available.

*Water Charges*: Unlike the system prevalent in most of the other States of India of charging an occupier's or owner's rate for water supplied, in addition to the land revenue assessment, in Madras the usual practice is to consolidate the irrigation charge with the land revenue assessment. It is only on the dry lands watered by newly constructed works or extensions, before the area of irrigation has become established, and in a few other special cases, that separate water rates are charged. The consolidated system is simple and elastic in areas where annual fluctuations in the area irrigated are slight. The consolidated rate is fixed by the Settlement Officer at resettlement and may vary from Rs. 14 to Rs. 2-8-0 per acre on fields which have enjoyed the same amount of irrigation. The variation is due to the circumstances of each field, the productiveness of the soil and the proximity to the market, etc. These variations complicate land revenue assessment and cause the levy to fall with unequal incidence on different localities. The best way to get over this difficulty will be to separate water charges from land revenue and charge for water according to use.

The water charge itself, when it is separately computed, is based on the area irrigated and not on the volume of water supplied. This system of charging, prevalent both in Northern and in Southern India, suffers from the defect that the cultivator is not induced to economize on the water used. The Royal Commission on Agriculure on taking evidence found that it was in Government canals that there was most wastage of water. Under well irrigation there is the greatest inducement for using water sparingly, for every gallon of water raised to the surface involves an expenditure of time and energy. In Government canals on the other hand, since the rate

9. The normal average yields for the State for irrigated cholam, cumbu and ragi are 1,467, 1,207 and 1,492 lbs. respectively.

is based on the area irrigated, the cultivator remains unaffected, as far as the water rate is concerned, by the volume of water used up. In certain parts of Northern India the excess of water applied to crops has been estimated at 30 to 50%.[10] This practice may have in the long run pernicious effects on the yield, for an excess of water, except for the rice crop, is bound to have harmful effects on soil fertility and crop yield. Water logging prevents adequate soil aeration during the time of growth and occasions the formation of impermeable pans just below the plough sole. But cultivators are not usually alive to this danger, and in their anxiety to give as much water to their crops as possible at the time the water is released by the irrigation authorities, tend to err in the direction of an over supply.

The solution for this is evidently the device of charging for water on the basis of volume,[11] The Indian Irrigation Commission which investigated the question, rejected the idea of installing metres on the field to measure the volume of water supplied, but expressed themselves in favour of a system of nodules which by regulating the flow of water from the channels, will determine the volume discharged. The Royal Commission on Agriculture too felt that before abandoning the method as impracticable (a tendency clearly noticeable in the Irrigation Engineers of the Punjab and Bombay) further investigations should be conducted. It was tendered in evidence before the Commission that the new system inspired confidence in the cultivator, reduced the opportunities for harassment and interference by the subordinate staff and enabled the extension of irrigation to new areas. There was bound to be economy in the water used, and therefore should be given a fair trial before a final decision was reached against it. In Madras there is no evidence of any attempt having been made to introduce the system of volumetric sale of water, and so the existing irrigational facilities do not benefit as many cultivators as they may be made to.*

* In 1948-49, figures for which were published after the book had gone to the press, the total acreage irrigated was almost the same as in 1946-47. Acreage under government canals was however higher by 230,000 acres and under wells by 170,000 acres, while that under tanks was lower by 400,000 acres. The percentage of area irrigated to net area sown was 32·2% as against 31·8% in 1946-47. The acreages under paddy, cumbu, cotton and sugarcane were lower, while that under cholam, ragi and groundnut were higher.

10. Report of the Royal Commission on Agriculture, p. 335.

11. Under the Ganges Valley Tube Well Scheme in the U. P. water is sold on a volumetric basis.

## Chapter VI

## ROADS, RAILWAYS AND INLAND WATERWAYS

*Roads*: An important component in the physical basis of agriculture is the road system of the country. Roads, railways and inland waterways between them provide the highways of commerce and facilitate the transportation of agricultural produce from the fields where they are grown to the ultimate consumers. From the producers' point of view, roads are of greater significance than the other two modes of transportation, for their immediate concern is with the movement of the crop from the fields to the nearest market town where usually the middleman takes charge of the distributive process. Railways and waterways too indirectly make a contribution to the material well-being of the agriculturists by cheapening and improving subsequent distribution. Marketing costs are thus on the whole reduced and a larger share of consumers' prices reaches the producers.

In most countries these three modes of transportation are complementary to one another and exist as an integrated whole. The utility of the whole is therefore determined by the utility of the least developed section of it, and since roads provide the facility for primary haulage, the availability of the railways or of inland waterways, for the subsequent transport of agricultural produce, depends upon the availability of good roads leading to them. In this manner all communications are interdependent, and the railways and waterways benefit from the construction of new roads or the improvement of old ones in much the same way as the roads benefit from the lengthening of the railway mileage. In spite of increasing road-rail competition, railway administrations in India are quite alive to this interdependence and would on the whole welcome new road construction. This is evidenced by the frank avowal of their position by the Bengal-Nagpur Railway, " Generally speaking, the railway regards all new road construction favourably as an extension of the transport facilities of the country and therefore in the majority of cases tending to bring more traffic to the railways ".[1] Thus both from the point of view of the agricultural producers and from the point of view of the transport system of the country as a whole, road development is an imperative necessity.

1. Report of the Indian Road Development Committee, 1927-28, p. 19.

Unfortunately in India the disproportionately large attention given to railway development by the Central Government and the lack of funds with the local bodies which were entrusted with the administration of roads, resulted in the neglect of road building, so that in 1928 the Road Development Committee had the necessity to call attention to the anomalous position of 40,000 miles of railways with only 59,000 miles of surfaced roads in British India. The position is slightly better now, but the improvement effected leaves much still to be desired.

*Road Mileage*: In the Madras State in 1935, when the Special Engineer on Roads, Mr. Vipen, reported on the condition of roads, a higher ratio of surfaced roads to railways obtained. For 4,625 miles of railways there were 23,000 miles of motorable roads, 19,700 miles of which were metalled. The total of all roads was 32,627 miles. By 1940 extra-municipal surfaced macadam roads had increased to 21,441 and the total of all extra-municipal roads to 35,717. Thus between 1935 and 1940, as a result of the special effort in road development, road mileage increased by about 3,000 and surfaced roads increased by about 1,700 miles. By 1945 the total mileage had increased to 36,669.

Madras has quite a long mileage of roads, and in absolute length takes the second place among the States of India. But relatively to the total area, all the other States of India with the exception of Bombay and Central Provinces, have longer mileages. In the matter of surfaced roads however Madras takes the first place in India. Table VII gives comparative figures relating to extra-municipal roads for all the provinces of British India.[1a]

Of the surfaced roads in Madras, 144 miles have modern surfaces, such as, tar bitumen, cement concrete, cement bound macadam, etc., and 21,297 miles have water bound macadam. The length of surfaced roads per 100 square miles in the State is 14·3 which is greater than in any other State in India. But the total of all roads per 100 square miles is only 25·1 miles, while Bengal and Bihar have 117·6 and 83·1 miles respectively. But most of the roads in these two latter States are village roads maintained in bad condition. Of Bengal's total of 91,000 miles, 66,000 are village roads, while in Madras very nearly 57% of the total mileage is surfaced and is in a motorable condition. In this respect Madras compares favourably even with the U.S.A. where in 1928 only about 15% of the roads were sur-

1a. Statistical Abstract for British India, 1930-31 to 1939-40.

TABLE VII

*Extra-Municipal Roads — British India, 1937-38*

| | Total area sq. miles | Surfaced roads miles | Total roads miles | Length of surfaced roads per 100 sq. miles | Length of all roads per 100 sq. miles |
|---|---|---|---|---|---|
| Madras .. | 142277 | 20441 | 35717 | 14·3 | 25·1 |
| Bombay .. | 123679 | 11134 | 19571 | 9 | 15·8 |
| Bengal .. | 77521 | 3887 | 91192 | 5 | 117·6 |
| United Provinces .. | 106248 | 8200 | 31589 | 7·7 | 29·6 |
| Punjab .. | 99200 | 4378 | 25142 | 4·4 | 25·3 |
| Bihar .. | 42335 | 4016 | 35160 | 9·4 | 83·1 |
| Central Provinces and Berar .. | 39920 | 5469 | 8662 | 13·7 | 21·7 |
| Assam .. | 55014 | 692 | 11071 | 1·9 | 31·6 |
| N.-W.F. Province .. | 13518 | 1077 | 3921 | 7·9 | 29 |
| Orissa .. | 13706* | 2003 | 4775 | — | — |
| Sind .. | 46378 | 272 | 11702 | ·5 | 25·2 |

* Before reorganization.

faced.[2] Some of the unmetalled roads too are motorable, and when they too are included in the calculation, length per 100 square miles comes to over 16·24 miles. According to certain calculations made by Mr. A. Vipen, the area per mile of metalled road was 7·21 square miles in 1935 and per mile of motorable road, 6·16 square miles. Persons per mile of metalled road were 2368 and per mile of motorable road, 2023.[3]

The distribution of roads in the various districts of the State is given in Appendix III. Tanjore, which is one of the smaller districts of the State, has the longest mileage, with Salem and Coimbatore coming second and third. But metalled roads form less than a quarter of the total in Tanjore, whereas in Salem and Coimbatore they form 50 and 60 per cent respectively. A few other districts too, viz. Nellore, Chittoor, North Arcot and Malabar, are well served by metalled roads. Malabar has the longest mileage of metalled roads, nearly 1366 miles, which form 72% of all roads in that district. West Godavari, Kistna, Bellary, South

2. Royal Commission on Agriculture in India, Report.
3. A. Vipen's Report, 1935, p. 7.

Arcot, Cuddapah, Trichinopoly, Tanjore, Ramnad and South Kanara have comparatively low figures, Kistna having the lowest figure. The greater predominence of metalled roads in some districts is easily explained by the fact that they lie along the routes of the great trunk roads, and the higher mileage is partly due to the long stretches of those roads lying within their borders, and partly also to the existence of a larger number of urban centres with municipalities administering them. A factor which would appear to have a direct bearing on the condition of the roads in a district is the financial capacity of the local body in charge of the roads. The differential advantage that a richer District Board or Municipality possesses is more often seen in the state of the roads maintained out of local funds than in any other activity of that body.

*Classification of Roads*: The roads of the State used to be classified into four categories, the Trunk roads, hereafter to be called National Highways, Class II and Class III and Class IV roads. Class IV are village roads, hereafter to be sub-divided into minor district roads and village roads. All the categories except the last were administered by the District Board or Municipality of the locality with the aid of their own funds and Government grants. For the upkeep of the trunk roads the provincial government used to make a grant ranging between Rs. 570 and 665 per mile within the limits of District Boards and going up to Rs. 1,000 within municipalities. The payment of this grant was subject to inspection by the Superintending Engineer, P.W.D. The local bodies were expected to supplement these funds with their own resources, which however has been found increasingly difficult in recent years. Class II roads are important marketing or inter-district roads, metalled or surfaced with gravel or laterite, and motorable throughout the year. These roads are maintained for the most part out of district board funds aided by a fixed Government grant. Inspection here was carried out by the Collector of the district whose certification was needed for payment of the grant. Class III roads are district roads dependent entirely on district board funds. Class IV consisted of village roads looked after by Panchayat Boards in localities where they existed. They were not regularly maintained, but only attended to when need arose and if funds permitted. For the most part they were only fair weather tracks. In addition to these roads, there were two other categories of roads, the P.W.D. roads and the forest roads. The P.W.D. roads had a total length of about 1,000 miles and comprised the Ghat roads, the roads in the agency tracts and along the banks of rivers, canals and channels. Of this total, only about half or more accurately 568 miles, serve

as through communications. The Forest Department maintained 4,072 miles of road to carry on the activities of the Department, but for their upkeep the district boards made a contribution.

*Finance for Road Construction and Maintenance*: Government grants given for road maintenance and construction fell into six distinct categories, grants for trunk roads, for important marketing roads given to district boards, miscellaneous grants to local bodies for roads, grants to local bodies for roads and bridges other than village communications, grants to local bodies for village communications and grants from the Central Road Fund Account for communications. The aggregate of these grants came in 1938-39 (Accounts) to Rs. 49·67 lakhs. During the war period they were more or less maintained and even slightly raised. In the budget for 1945-46 provision under this head was made for an expenditure of Rs. 65·30 lakhs. Details of these grants for 1938-39 and the war years are given in the table below:—

TABLE VIII

*Grants to Local Bodies for Roads*

(in lakhs of rupees)

| | 1938-39 | 1941-42 Accounts | 1942-43 Revised estimate | 1943-44 Accounts | 1944-45 Revised estimate | 1945-46 Budget |
|---|---|---|---|---|---|---|
| For trunk roads .. | 19·81 | 19·21 | 16·87 | 15·50 | 17·60 | 21·02 |
| For marketing roads .. | 14·34 | 14·60 | 14·40 | 14·75 | 17·88 | 21·62 |
| Miscellaneous grants for roads .. | ·30 | ·32 | ·32 | ·29 | ·32 | ·31 |
| For roads and bridges other than village communications .. | 2·36 | 7·52 | 11·74 | 8·83 | 12·21 | 10·65 |
| For village communications .. | ·26 | 1·40 | 2·70 | 2·30 | 2·70 | 2·70 |
| Central road fund account and communications .. | 12·60 | 15·33 | 17·00 | 9·12 | 11·25 | 9·00 |
| Contribution to Provincial road fund .. | — | 9·33 | 7·78 | ·10 | ·04 | — |
| | 49·67 | 67·71 | 70·81 | 50·89 | 62·00 | 65·30 |
| Deduct .. | — | 9·33 | 7·78 | ·10 | ·04 | — |
| | 49·67 | 58·38 | 63·03 | 50·79 | 61·96 | 65·30 |

In addition to these grants, almost the entire net proceeds of the Motor Vehicles Taxation, amounting annually to the tune of Rs. 72 lakhs, were paid to Local Bodies by the Provincial Government as compensation for the loss of tolls and licence fees. This sum of money also was designed for road maintenance and construction. Special grants for the construction of village roads have been a special feature of this State since 1925-26, and when the Royal Commission on Agriculture conducted their enquiry they found that Madras and the Punjab were the only provinces in India which had made such a provision. These grants were however for construction and not for maintenance and were conditioned by the district board concerned providing an equal amount. The grant system in Madras was overhauled in 1929-30 to give effect to the recommendation of the Indian Road Development Committee. When the Central Government inaugurated the Road Development Fund out of the proceeds of the duty on petrol and granted subventions to the provinces, the Madras Government directed that funds available for expenditure should be allotted on the basis of a full grant for trunk roads and a half grant on other classes of roads, the local bodies being required to find the funds themselves out of the compensation given to them for loss of tolls and licence fees for the other half. This new policy obviously resulted in the maintenance of all trunk roads in a superb condition and the comparative neglect of other classes of roads, owing to the inability of the local bodies to find the needed funds. The trunk roads as a rule run parallel to the railways and serve as inter-district and inter-state communications. The volume of traffic is very much lower on these than on the more important marketing roads, and so the concentration of state expenditure on these roads generated, as the Mitchell-Kirkness Report stated, a lack of balance in the road system of the State. In 1938-39 grants for trunk roads constituted the largest item under this head and formed over a third of the aggregate grants. Subsequently, however, the claims of the marketing roads came to be recognized and in the budgets for 1944-45 and 1945-46 an equal provision was made for them. The grants for the development of village communications too have been steadily on the increase. During the last four years, nearly 2¾ lakhs have been annually given for that purpose. Miscellaneous grants for the construction of bridges too increased from Rs. 2·36 lakhs in 1938-39 to Rs. 12·21 lakhs in the Revised Estimates for 1944-45 and to Rs. 10·65 lakhs in the budget for 1945-46. These increases however did not represent increased facilities placed at the disposal of the local bodies, for when allowance is made for the increased cost of

construction and maintenance, the surplus available for a forward policy will be seen to have been quite low.

The inadequacy of the funds available with local bodies has obviously militated against a sufficient increase in mileage or the maintenance of existing roads in good repair. From all the evidence it would appear that there is a steady deterioration even in surfaced roads. The Royal Commission on Agriculture noticed it as general throughout India in the case of roads maintained and financed entirely by local bodies and attributed it to the growth of motor traffic. Motor traffic had ushered in an entirely new range of problems of road construction and maintenance, which the diminishing finances of the local bodies could not cope with. They stressed the importance of improving Class III and Class IV roads to enable the villagers to benefit from the good condition of the main roads and pleaded for the elimination of the distinction between Classes II and III roads which has little foundation in economic necessity. The distinction between the two was an administrative requirement, for Class II roads are inter-district communications in the maintenance of which the State Government may be said to have a responsibility, while Class III roads are intra-district roads which naturally fall as an exclusive charge on district funds. But many of these district roads are marketing roads the maintenance of which in good condition is an economic requirement for the progress of agriculture. They should not therefore be permitted to deteriorate and become unusable through lack of funds. Even some of the inter-district communications fall into disrepair on certain sections due to the inattention given to them by certain districts to which they are not so important as to others. Mr. A. Vipen has pointed out the existence in the State of 25 such roads demanding a capital expenditure for improvement at pre-war prices of Rs. 36·8 lakhs and a recurring charge of Rs. 77,000. These roads and the district roads mentioned above would need a higher scale of expenditure on maintenance if they are to serve their purpose throughout the year. The sanctioned scale of expenditure on maintenance, in the opinion of Mr. Vipen, kept the road in good condition only for 3 to 6 months and for the rest of the year they were unusuable except by the bullock cart. It is this periodical state of disrepair which does permanent injury to the road and generates that steady deterioration in the surface to which a reference was made earlier. If this is allowed to continue, in the course of a few years, re-building of the road would be necessary at an exorbitant cost. Thus in 1933 the Government in this State had to make a special non-recurring grant of Rs. 4·5 lakhs for the

rebuilding of certain roads which had gone past the stage of repair. Increased recurring expenditure therefore obviates the necessity for periodical capital expenditure and further maintains the road in a usable condition throughout the year. In deciding on surfacing a road, the ability to make financial provision for meeting the annual maintenance expenditure in an adequate measure should therefore be as important a consideration as the provision of the initial funds. Inadequate attention given to this aspect has undoubtedly been responsible for the improper use of funds in the past. A local body, especially in urban areas, should resist the temptation of utilizing its funds for giving an improved surface to its roads, such as, cement concrete or tar bitumen, unless it is satisfied with regard to the provision for annual charges. The danger of insufficient scrutiny is especially great in an elected body subject to frequent changes and dependent on popular support for re-election. Technical control should therefore in larger measure vest in the permanent staff, and its advice in technical matters should by convention be made almost binding on the local body concerned.

Maintenance charges for the 33,232 miles of road in the State, of which 19,732 miles were metalled, came to roughly Rs. 90·46 lakhs.[4] Of this expenditure provincial and central funds would have contributed about half and local bodies the remainder. If a higher scale of expenditure is to be incurred, state revenues will have to bear the major portion of the burden, as local revenues, inelastic as they are, cannot be expected to shoulder the responsibility. On a water bound macadam surface, with a traffic of 250 bullock carts per day, annual maintenance charges, including repayment of capital, investment interest and repairs, have been estimated to amount to Rs. 1527 per mile. A later estimate is Rs. 2,000. Initial cost of building will be Rs. 5,000 per mile (later estimate Rs. 8,000) and the life of the road 4 years. With heavier traffic life will be reduced and maintenance charges correspondingly raised. For most of the roads of the State where daily traffic does not exceed 250 carts, a surface dressing with a life of 4 years is, in the opinion of experts, quite adequate, but with heavier traffic improved surfacing will be found to be more economical. In Vipen's view[5] for a traffic of 250 to 400 carts per day a premix carpet 1½" thick with a life of 10 years may be thought of, and for a traffic of 450 to 800 a day, 2½" thickness may be required. If the traffic is over 800 a day, a concrete surface with a life of 20 years may be

4. A. Vipen's Report.
5. Ibid.

found to be the most economical. The calculated cost of providing a concrete surface for the trunk and important marketing roads of the State, with a total length of 9,000 miles, is Rs. 30 crores, and for a premix carpet, Rs. 15 crores. Apart from the prohibitive cost, it is very doubtful if such superior surfacing all through that mileage is required for our purposes and whether it would eventually work out to be as economical as water bound mecadam. In many places a reversion to water bound macadam has been made, after a period of experimentation with improved surfacing. Surfacing as a rule stands wear better if the vehicles plying on the road have broad tyres. The 4 inch tyred carts of northern India principally account for the greater life of the roads there, but we in Madras have invariably 2″ tyres for our carts, and so a mere surface dressing will not be sufficient, in case traffic should be heavy. However the decision as regards the surface to be built should be based among other considerations on a traffic census.

*Bridge Construction:* An integral part of road improvement is the construction of bridges at points where rivers and streams cross the roadway. Lack of bridges and crossings breaks up the road system into disconnected lengths and renders some roads practically useless. Such roads can be used only if there is the possibility of fording the rivers. This is clearly out of the question during the rainy months, and even during the dry weather involves much wastage of time and throws too heavy a burden on the draught animals. The load factor also is affected, for carts can be loaded only upto the capacity of the bullocks on the most difficult stretch of the road. Some inter-district roads too suffer from this defect, and in such cases communication between districts is rendered much more circuitous than it need be. In 1935 Mr. Vipen found that for the improvement of inter-district communication, the construction of eight inter-district bridges, at an estimated cost of Rs. 105·85 lakhs, was needed, and he formulated district plans of bridge construction at a cost of Rs. 215 lakhs. Bridge construction is costly and should be undertaken only if the potential traffic warrants it. In some crossings though the lack of a bridge causes much inconvenience to those who are put to the necessity of crossing it, the volume of traffic does not justify the incurring of the high cost. The purpose will be served equally well by the provision of a ferry service. The choice between a ferry and a bridge has to be made on the basis of many factors, among which the volume of traffic, the relative costs of bridge construction and the maintenance of a ferry service, the depth of water in the stream at all parts of the year, the strength of the current of water and the neces-

sity or otherwise of towing by steam launches are the most important. In some places the condition of the soil of the bed may altogether rule out a bridge and make the provision of a ferry service, coupled with towing, the only alternative. Fortunately however there are not many localities in the State which are characterized by such conditions.

As in the case of road surfacing, lack of finance has been the main handicap in bridge construction. Ordinary revenues of local bodies, without special provincial grants, were altogether insufficient for embarking on the projects of major bridges, and they were found insufficient even for the construction of minor bridges on district roads. Even the concession offered by the railways of combining a road bridge with a railway bridge at reduced cost could not be availed of. There is therefore the imperative need for a more liberal system of grants for bridge construction from state funds and the inauguration of a policy of loan finance. In the opinion of the Road Development Committee, loan finance is of special appropriateness to bridge construction.[6]

*Need for Increase of Roads*: Apart from the improvement of the existing road system through bridge construction and surfacing, there is the further need for extending mileage. More village roads should be built connecting the villages with the main roads and more railway feeder roads. The Royal Commission on Agriculture as well as the Road Development Committee expressed themselves in favour of the development of village roads and the diversion of more money for that purpose. These roads form the weakest links in the chain of roads, and practically nullify the economic advantages which good main roads place at the disposal of the community. Unless these roads are improved, the civilizing influence of motor transport can never reach the Indian villages, nor the economic gains that flow therefrom. With the development of motor transport the tendency has always been to spend whatever funds are available on the roads used by the motor vehicles. This policy has no doubt resulted in the improvement of the main roads, but the full utilization of those facilities is virtually prevented by the neglected state of the village roads.

Concurrently with the development of these roads, there should also be an extension of the mileage of railway feeder roads. Many existing roads run parallel to the railways and in a way compete with them for traffic. This competition has become keener with

6. Report, p. 46.

the advent of the motor bus and the lorry. Unhealthy though this is, and uneconomical to both modes of transport, it is the result of historical forces the direction of which cannot easily be reversed. But to compensate the railway for loss of traffic and to bring it within easy reach of the agricultural producers, access to them from the villages should be provided by the construction of feeder roads. Requirements were computed by railway administrations for the purpose of placing before the Special Engineer for Roads, Mr. Vipen, at 367 miles of roads. The initial cost of this was estimated in 1935 at Rs. 21·98 lakhs and recurring charges, at Rs. 72,960. For road development and improvement as a whole for all the districts Mr. Vipen estimated a capital expenditure of Rs. 217·79 lakhs and maintenance charges of Rs. 7·26 lakhs. For all items of improvement to the road system including inter-district roads, major bridges, district roads, railway feeder roads and all plant required for construction and repair, the initial cost was estimated at Rs. 611·16 lakhs[7] and additional maintenance charges, at Rs. 23·04 lakhs. To what extent road mileage will increase as a result of this expenditure or what proportion of total roads will get surfaced are not stated in the Report.

All this has however become out of date by the inauguration of planning in the post-war period and the new emphasis which has come to be placed on road development as an integral part of the development of communications. Among the plans which were prepared by the Government of India before the grant of independence, the road plan was one, and some headway has already been made in implementing it.

*Post-War Road Development Scheme*: Under the post-war developmental plans the subject of communications is regarded as of all-India importance and so for the purpose of laying down the principles that should apply, an all-India Conference of Road Engineers was held. This Conference after a detailed discussion of all the aspects of the problem, made far-reaching recommendations which the Government have more or less accepted. Roads were divided into four categories by the Conference, viz., (1) national highways, comprising roads which traverse the length and breadth of India connecting the capitals of States, large ports and foreign highways and roads which are of military and strategic importance ; (2) State highways consisting of all other major roads of a State connected with national highways or the highways of adjacent

7. Report, p. 222.

provinces or states and passing through district headquarters and important towns or cities within the state; (3) District Roads traversing each district and connecting areas of production with each other or with markets or the highways and railways; and (4) Village Roads connecting villages or groups of villages with each other and with the nearest district road or highway, railway or river ghat. The district roads are divided into two fresh categories, major district roads and other district roads on the basis of the expected traffic. The Conference further emphasized the need for co-ordination and the determination of road requirement on the basis of geographical, agricultural and population conditions and plans of agricultural and industrial development.

In accordance with the principles laid down by the Conference and accepted by the Government of India, the States have drawn up schemes of road development to fit into the all-India scheme. The Government of Madras have accepted the categories of roads made by the Conference and chalked out a plan of development. According to that plan, covering a period of 15 years, the State is to have an addition of 20,000 miles of roads, bringing the total mileage to 56,877 miles, of which 18,000 miles are to be all-weather new 'district minor' and 'village' roads. The programme, when completed, will connect 11,600 villages, now unconnected, with the road system and bring every village within 5 miles of a highway or a district road. The details of the programme are as follows[8]:—

TABLE IX

| | Present mileage | Proposed mileage |
|---|---|---|
| National Highways .. | 2784 | 2981 |
| Other important state routes .. | 1825 | 2177 |
| Major district roads and other district roads .. | 14700 | 16356 |
| Village roads including minor district roads .. | 17360 | 35363 |
| Total .. | 36669 | 56877 |

8. Design for Prosperity—Communications. (Government of Madras).

The cost of the scheme for the full 15 year period is estimated at Rs. 75·23 crores of which Rs. 66 crores are to be spent on works alone. Details have been worked out only for the first 5 years, and according to those details, the first 5 year period will witness an expenditure of Rs. 27·77 crores distributed over the five years in the following manner. In the first two years, which form one period, capital expenditure on new works will be Rs. 6·4 crores; in the third year, Rs. 1·17 crores, and the last two years, Rs. 18·2 crores. Provision for maintenance expenditure for the five years is Rs. 2 crores. In the first two years the main preoccupation will be the repair and improvement of existing roads through renewal of surfaces and widening of roads, and the next three years will be devoted to new road construction, the provision of new bridges, culverts and causeways and the strengthening of existing weak bridges and culverts, metalling of village roads, the up-grading of existing roads to the standards of the classes to which they belong, the provision of improved surfaces, such as cement-concrete or bituminous to important roads, and effecting other improvements designed to ensure greater safety and comfort.

To carry out this programme a separate State Highways Department has been constituted which will have a staff when fully developed, three times the size of the existing staffs for road works in the Public Works Department and the District Boards and Municipalities. Part of the staff will be lent to the District Boards for district board work, but they too will be controlled by the higher staff of the Highways Department. The new Department will take over for administration the trunk and important marketing roads (the National Highways, the State Highways and the major district roads) with a total mileage of 13,700 and the roads now maintained by the P.W.D., while the other roads will still be left in the administrative charge of local bodies. Grants hitherto given from state funds to the local bodies for the maintenance of the major roads will be withheld and will be placed, with such additions as are needed, at the disposal of the new department. The amount annually made available thus for maintenance of roads will be about Rs. 144 lakhs. The local bodies will continue to receive the whole amount of compensation for loss of tolls and motor licence fees, etc., or ad hoc grants for the maintenance of the roads still in their charge, roughly amounting to Rs. 64 lakhs. Under the new arrangement the local boards will have to provide only Rs. 19 lakhs out of their own funds for this purpose as against Rs. 25 lakhs provided by them hitherto. The new annual charge on state funds under the new dispensation after deduction of all

possible savings, is estimated at Rs. 104 lakhs. (These estimates are based on rates 75% higher than pre-war rates. They may need correction under the altered price-level).

The capital expenditure for construction and for other works will obviously be provided by the State Government out of their own funds or loans raised for the purpose and from any grants or subventions received from the Centre. It is likely that towards the expenditure on the National Highways, which are of national importance, the Central Government will make adequate grants, and in addition give subventions, as hitherto, to the State out of the Central Road Fund. But the bulk of the finance needed will have to be raised through loans. It looks therefore that Governments in India have at long last accepted the principle of utilizing loan funds for road building. The question has been under debate for sometime now, and the Road Development Committee which investigated into it refrained from coming to any precise finding in the matter. They felt that it was a matter for each state government to consider and decide according to circumstances. However they deprecated any large employment of loan funds for schemes of road expansion, and laid down the principles that only construction and reconstruction should be financed from loans, that such construction should be confined to the more permanent parts of a project such as a bridge, the life of which can be estimated with fair accuracy, and should be extended to road building only under the clearest indication of long run economy.[9] On the basis of these findings, the contemplated expansion with the aid of loan finance is clearly inadmissible, but the policy of planning has evidently altered the aspect of things and rendered possible financial devices hitherto laid under a taboo.

The execution of the plan however depends on the availability of tools and materials some of which have to be procured from abroad, such as road rollers, lorries, stone crushers, concrete mixers, pumps, bitumen boilers, theodolites, etc., and others like cement, bitumen, steel, coal, etc. have to be manufactured within. The non-availability of both types of materials at present operates as a formidable hindrance to the speedy implementation of the plan.

*Railways*: In 1935 the State had 4,625 miles of railways.[10] A little less than half of this mileage was Broad Gauge and a little more than half, Metre Gauge. The Narrow Gauge was confined to 102 miles. Per 100 square miles of area Madras had 3·56 miles

9. Report, pp. 46 and 47.
10. A. Vipen's Report on Road Development, p. 8.

of railway. Area per mile of railway was 28 square miles and persons per mile were 10,700. In respect of railway facilities the State may be said to occupy a middle position among the States of India. From the table given below it will be seen that from the population point of view, barring Bengal and Bihar and Orissa, the State is worse off in the matter of railway facilities than any other State of India. In the length of mileage in relation to area the United Provinces, Bengal, the Punjab, Bihar and Orissa, Sind and Assam are better off than Madras. Being in the main an agricultural State the indispensability of large railway mileage need not be emphasized, and the fact that she is better off than Bombay which is an industrial State or the Central Provinces and the North-West Frontier Province which are not fertile region of India, does not speak much of the provision made in this State.

TABLE X

*Railway Mileage—British Indian Provinces*[11]

| | Length of railway per 100 sq. miles (miles) | Area per mile of railway (sq. miles) | Population per mile of railway |
|---|---|---|---|
| Madras .. | 3·56 | 28 | 10700 |
| Bombay .. | 3·25 | 30·8 | 8740 |
| Sind .. | 3·68 | 27 | 3450 |
| Bengal .. | 4·81 | 20·78 | 14117 |
| United Provinces .. | 5·32 | 18·8 | 9500 |
| Punjab .. | 4·52 | 22 | 6400 |
| Bihar and Orissa .. | 4·00 | 25·12 | 11400 |
| Central Provinces .. | 2·67 | 37·45 | 6245 |
| Assam .. | 3·65 | 27·4 | 6720 |
| N.-W. Frontier Province .. | 3·20 | 31·30 | 8270 |

In the opinion of Mitchell and Kirkness the area unconnected by railways in Madras is something over one-half of the whole, whereas in the Punjab, the United Provinces, Assam and Sind it is less than a third and in Bengal which has many waterways, it is only 40%.[12] Having regard, however, to large blocks of forest and hilly country, it cannot be supposed that there is any large field for railway development in some parts of the State.

11. Taken from Mitchell-Kirkness Report. Appendix B, p. 80.
12. Report, p. 5.

The total mileage of 4625 is distributed among the districts as given in the table below:—

TABLE XI

*Distribution of Railway Mileage by Districts—Madras, 1935*

| District | | Miles of railways | Area sq. miles | Population million | Length of railway per 100 sq. miles of area | Area per mile of railway sq. miles | Persons per mile of railway |
|---|---|---|---|---|---|---|---|
| Anantapur | .. | 262 | 6741 | 1 | 4 | 26 | 3800 |
| N. Arcot | .. | 228 | 4648 | 2·2 | 5 | 20 | 10000 |
| S. Arcot | .. | 234 | 4208 | 2·5 | 5·5 | 18 | 10000 |
| Bellary | .. | 226 | 5713 | ·9 | 4 | 25 | 4000 |
| Chingleput | .. | 153 | 3091 | 1·7 | 5 | 20 | 10000 |
| Chittoor | .. | 238 | 5901 | 1·4 | 4 | 25 | 6000 |
| Coimbatore | .. | 151 | 7085 | 2·4 | 2 | 47 | 15000 |
| Cuddapah | .. | 125 | 5919 | ·9 | 2 | 47 | 7000 |
| E. Godavari | .. | 108 | 6257 | 1·8 | 1·7 | 58 | 16000 |
| W. Godavari | .. | 122 | 2361 | 1·2 | 5 | 19 | 10000 |
| Guntur | .. | 297 | 5757 | 2 | 5 | 19 | 6700 |
| S. Kanara | .. | 60 | 4021 | 1·4 | 1·5 | 67 | 23000 |
| Kistna | .. | 144 | 3547 | 1·3 | 4 | 25 | 9000 |
| Kurnool | .. | 207 | 7581 | 1 | 2·7 | 37 | 5000 |
| Madura | .. | 185 | 4912 | 2·2 | 4 | 27 | 12000 |
| Malabar | .. | 214 | 5794 | 3·5 | 3·7 | 27 | 16000 |
| Nellore | .. | 196 | 7948 | 1·5 | 2·5 | 41 | 7600 |
| Nilgiris | .. | 21 | 982 | ·2 | 2 | 47 | 10000 |
| Ramnad | .. | 220 | 4819 | 1·8 | 4·5 | 22 | 8200 |
| Salem | .. | 258 | 7058 | 2·4 | 3·6 | 27 | 9300 |
| Tanjore | .. | 295 | 3742 | 2·4 | 8 | 13 | 8100 |
| Tinnevelly | .. | 214 | 4315 | 2 | 5 | 20 | 10000 |
| Trichinopoly | .. | 185 | 4314 | 1·9 | 4 | 23 | 10000 |
| Vizagapatam | .. | 282 | 17186 | 3·5 | 1·6 | 61 | 12000 |

An examination of the table shows that among the districts South Kanara is least provided with railway facilities. Persons per mile of railway and area per mile are largest there and railway mileage per 100 square miles, lowest. Other districts which are poorly off when area and population are both taken into account are Vizagapatam, East Godavari, Coimbatore and the Nilgiris. The case of the Nilgiris is easily explained, and to a certain extent the existence of the hilly agency tracts in Vizagapatam and East Godavari explains the low mileage in those districts. Coimbatore too is hilly, but not to the same extent as the other districts, and so, for this deficiency other reasons have to be found. Among the

districts fairly well-served, Tanjore takes the first place, with 8 miles of railway per 100 square miles and only 13 square miles per mile of railway. Since it is thickly populated, persons per mile do not appear to be very much less than in certain other districts, but even so, the number is below the State average. Other localities with good mileages are the irrigated tracts, the two Arcots, Chingleput, West Godavari, Guntur, and Tinnevelly. Malabar and Cuddapah are fairly low down in the scale.

But whether railway development should be undertaken in the deficient localities or for the State as a whole will have to be decided in conjunction with the question of road development. The railway companies serving the State have had projects of construction under consideration, but with the dawn of road-rail competition it has been found necessary to revise them. The Mitchell-Kirkness Report which dealt with this question clearly disapproved the undertaking of projects in localities where good roads existed or greater advantage was supposed to accrue from the construction of good roads. Out of the 7 projects which the M. & S. M. system had, only two were approved and out of the 19 schemes of the S. I. R., only 8 received approval. These approved schemes involve a total mileage of 662 miles. Some of them are required as through connections and others are justified on the ground of heavy traffic, especially merchandise.

Road-rail competition has given a new orientation to the policy of railway building and necessitated the co-ordination of railway and road development. Nearly 61% of the existing railway mileage has a metalled road running parallel to and within ten miles of the railway. Already railway income has got considerably reduced owing to this competition on existing roads, and so the construction of new lines have to be undertaken in co-ordination with road building. The approved schemes are mostly located in the districts of Coimbatore, Madura, Ramnad, Chittoor, Cuddapah and Vizagapatam which are at present poorly served by the railway. The list of approved projects is given below:—

TABLE XII

| | | |
|---|---|---|
| 1. | Cumbun — Kalahasti | .. 238 miles |
| 2. | Madras — Renigunta | .. 78* " |
| 3. | Pollachi — Vennanthurai | .. 15 " |
| 4. | Bodinayakkanur — Gudalur | .. 28 " |
| 5. | Karaikkudi — Madura — Palni | .. 51 " |
| 6. | Tiruppur — Satyamangalam | .. 94 " |
| 7. | Tanjore — Pattukkotai | .. 28 " |
| 8. | Arantangi — Karaikkudi | .. 16 " |
| 9. | Manamadurai — Maniyachi — Tuticorin | .. 69 " |
| 10. | Satyamangalam — Hardanapalli | .. 45 " |

From the point of view of the agricultural industry, railways provide long distance haulage at low rates, and for a large State like Madras with quite an appreciable acreage under commercial crops, such facilities form an essential condition of rural prosperity. One result in the past of the opening out of the country by railway building has been transference of land from food crops to the commercial crops. Though at the present time, owing to shortage of food that tendency may be deplored, there can be no doubt that, from the long run view, it has been to the benefit of the agriculturists. And in the future, with industrialization of the State on a large scale in sight, the growing of commercial crops and their transportation over long distances, from the growing localities to the consumption centres, will increasingly demand transport facilities of the right kind. Whether roads alone will provide it as economically as the circumstances require, is perhaps doubtful. More railways will be needed, and the new projects which will become economical of construction in the new set-up may be many more than the list given above. The old list was prepared in the conjuncture of the old circumstances, but in the new environment created by over-all planning and development quite other considerations will weigh both in the preparation and execution of railway projects.

*Inland Waterways*: The Inland Waterways of the State comprise the navigable portions of rivers and the backwaters with which they are connected, artificially constructed navigation canals and the navigable stretches of irrigation canals. They have a total mileage of 1616 distributed in the districts as follows:—

TABLE XIII

| | | | |
|---|---|---|---|
| E. Godavari | .. 559 miles | Chingleput | .. 98 miles |
| W. Godavari | .. 218 „ | Tanjore | .. 35 „ |
| Kistna | .. 226 „ | Malabar | .. 95 „ |
| Guntur | .. 174 „ | S. Kanara | .. 4 „ |
| Nellore | .. 132 „ | Bellary | .. 75 „ |

This total mileage falls into six different systems, the Godavari canals, the Kistna canals, the Buckingham canal, the West Coast canals, the Vedaranniyam canal and the Kurnool-Cuddapah canal. With the exception of the Kurnool-Cuddapah canal, all these waterways are situated in the coastal districts of the State and are connected with the sea either by their tidal arms or through backwaters. The provisions of the Canals and Public Ferries Act of 1890 apply to all of them, except the Kurnool-Cuddapah canal. The Godavari, the Kistna and the Kurnool-Cuddapah canals are used for both

navigation and irrigation. The Godavari, the Kistna and the Buckingham canal are connected with one another and offer a through transport facility for nearly 1400 miles.

*The Godavari Canals*: The Godavari canals system comprise the following:—

1. The Godavari river from above the anicut at Dowlaishweram upto Tsandrapatla, about 188 miles higher up, the northern most limit of the Godavari district. The Sabari river, a tributory of the Godavari is also navigable from Konavaram, where it joins the Godavari, for a distance of 25 miles upto Kunta.

2. The branches of the Godavari below the anicut including the tidal arms of the river. These branches are the Gowtami Godavari navigable for about 17 miles, the Teki drain, navigable for 15 miles, the Vasista river, navigable for 27 miles and the Vynatheyam river, navigable for 16 miles.

3. The canals of the delta system in the Eastern, Central and Western sections of the delta.

The total stretch of the waterways in the Godavari system is about 777 miles, but the absence of a lock in the anicut to enable boats to cross the anicut prevents the through use of this mileage. The boats in frequent use in this system do not have heavy tonnage as mechanically propelled boats are not as a rule permitted on the canals.

*The Kistna Canals*: Like the river Godavari, the Kistna river too is navigable above the anicut at Bezwada for 22 miles throughout the year and for 60 miles during the monsoon months of July to November. Just above the anicut the Eastern and the Western Delta canals take off on either side of the river and the anicut serves as a connecting link between the two systems. During the months, June to January, the depth of water in the main canals does not fall below 8 ft., and so cargo boats of 1 to 40 tons can easily ply therein. All the canals in the Kistna delta are generally closed from 15th March to 1st June as navigation is impossible then. Even in February when the water level goes down, navigation is rendered difficult. The river below the anicut from Bezwada to Adavapatam lock is navigable for light river streamers, launches and heavy cargo boats from July to November, but thereafter till July navigation is difficult. The last section of the river, from Adavapatam to the sea, a distance of 16 miles is however navigable throughout the year. From above the anicut to below it crossing is rendered difficult by the absence of a lock.

*The Buckingham Canal*: The Buckingham canal has a length of 258 miles and connects the Commanur canal of the Kistna Western delta with the Mercanam Backwater in South Arcot. It is entirely coastal and runs through backwaters, depressions, low lying land and the estuaries of all the rivers it crosses. It affords an easy and cheap means of communication from the northern most point of the Godavari canals to Madras and also to 62 miles further south. The canal has two reaches, viz., the North Canal with a length of 196 miles north of Madras and the South Canal south of Madras with a length of 62 miles. Ordinarily the Canal is fit for navigation throughout the year, as also all the backwaters and depressions it crosses. But the north canal which is wider and deeper offers navigation to boats of 30 tons with a draft of 3 feet. The South Canal on the other hand can be used only by boats of 10 tons with a draft of 2 feet. The Canal is commonly used for the transport of bulky goods of low value, such as firewood, building materials, iron ware, piecegoods, food grains, salt and provisions.

*The West Coast Canals*: The West Coast canals usually fall into six sections, from Kavvayi in Chirakal taluk, the northernmost taluk of British Malabar, to British Cochin in the south. For part of the distance they traverse the Indian State of Cochin. These canals are some of them natural backwaters and others artificial canals. The Connolly Canal is the most important artificial section of it. Boats of 1 to 6 tons are navigable over certain sections of the system, but in certain others boats of higher tonnage than 2 are not possible.

*The Vedaranniyam Canal*: The Vedaranniyam Canal is the only inland waterway in the Tanjore district and has a length of 35½ miles. Before the construction of the railway line between Tiruturaipundi and Agastayampalli the canal formed the most important highway of commerce. Boats from 2 to 11·3 tons are navigable and the lock at Karunganni measuring 100 feet by 20 feet facilitates crossing. With the advent of the railway the Canal has fallen into disuse and at present articles, such as, straw, cowdung and firewood are alone transported over it.

*Post-war Schemes*: In the post-war plans of the Government of Madras, canal improvement has a place, and much improvement and some extension of the canal system are provided for. An entirely new canal connecting the Vedaranniyam Canal with the southern end of the Buckingham Canal is the most important of the contemplated extensions. After its construction there will be a through inland waterway from Cocanada to Port Calimere, a distance of 600 miles,

The scheme is estimated to cost Rs. 25 lakhs and take four years to build.

In addition to this there are eight other schemes of improvement to existing canals. They consist of widening narrow reaches, resetting of banks to prevent erosion and control floods, construction and improvement of locks and the provision of better shore accommodation for goods, adequate wharfs for boats to unload at and better accommodation for staff. These schemes apply to the North and South Buckingham canals, the Vedaranniyam canal and the West Coast canals, and are expected to involve a capital expenditure of Rs. 28 lakhs and a recurring expenditure of Rs. 88,000.

*Co-ordination of Transport*: The development of motor transport on roads and the growing competition between the two 'public carriers', the road and the railway, to which a reference has been made in a previous section, has brought to the fore the urgent need for the co-ordination of transport on these two highways. The provision of better and more roads in the future will increase this competition and inflict further declines on railway income. Now that the railways are national concerns and are run as a department of the Central Government, the State is intimately interested in their profitable working and cannot let State funds be expended on road development which will directly threaten that position. Both road and railway expansion are needed for the country's development, but if duplication is to be avoided, the expansion of each should be planned in such a manner as to effect a co-ordination between the two and control the uses to which they are put. The luxury of having two competing modes of transport, each developed to a pitch of high efficiency and ensuring the comfort and convenience of its users, is more than what the country can afford. This realization and the facility for such co-ordination provided by the complete nationalization of the railways have induced the State to bring into existence a machinery for it. The principle underlying such co-ordination and control is that the communication problem should be treated as a whole on national lines.

The Transport Advisory Council set up to advise the Government on this matter have laid down the following principles of such co-ordinated control:

1. that roads should be improved and expanded in a co-ordinated manner, particular attention being paid to the provision of short-haulage roads for motor vehicles where railway lines would be uneconomical;

2. that competition between the railway and road motor transport on the one hand and competition between two road transport companies on the other should be avoided;

3. that the Government should decide on the nature of controls to be exercised on the railways, roads and waterways and the type of authorities to be set up both at the Centre and in the States for exercising that control;

4. that an independent tribunal should be set up for adjudicating on differences of opinion between the Central Government and the State Government or between railways and road operators and upon the difficult question of tariffs;

5. and that the Government should publish a Highway Code to govern all matters concerning these 'Carriers'.

On the basis of these principles, the Transport Advisory Council recommended and the Government accepted that each State Government should create a wholetime office of State Transport Commissioner to co-ordinate the working of the two public carriers and to grant permit to operators, and that the railways in conjunction with private road operators should form joint road-rail companies for running road transport in which the Central and the State Government concerned may financially participate. Further recommendations were: (1) that where a joint road-rail company or a tripartite company operated, no new permits should be granted to other parties; (2) that the Company in question should be permitted by amalgamating with itself other private operators already in existence or buying them up, ultimately attain to a position of monopoly; (3) that in granting or renewing road permits for distances exceeding 50 miles, the Transport Authority should consider the adequacy of existing or prospective railway service, that such permits should ordinarily be granted only for distances between 50 and 100 miles, and for distances beyond that, the objections of railway administrators and other parties concerned, including the Central Government if the route is on a National Highway, should be heard before the grant, and that in no case should the permit be granted for a distance exceeding 200 miles; and (4) that railways or their contractors should normally be granted permits to operate collection and delivery services within a radius of ten miles of railway stations.

The Government of Madras have accepted many of these recommendations, and in accordance with them have constituted, in addition to the Highways Department which has been explained

already, a State Transport Authority including two non-officials (one for the northern districts and the other for the southern districts) with the State Transport Controller as Chairman. To work under this State Authority, Regional Transport Authorities too have been formed, seven in number for the seven zones into which the State has been divided. Each zone has a Regional Transport Officer who is the Secretary of the Authority, and the other members are the Presidents of District Boards and the District Magistrates of the districts comprised in the zone. The District Magistrate of the district where the headquarters is located is the Chairman. The seven zones are the following:—

| Zone | Headquarters |
|---|---|
| 1. Vizagapatam, East Godavari, Kistna and Guntur .. | Rajahmundry |
| 2. Kurnool, Anantapur, Cuddapah, Bellary, Nellore and Chittoor .. | Cuddapah |
| 3. Chingleput, North Arcot and South Arcot .. | Vellore |
| 4. Salem, Trichinopoly and Tanjore .. | Trichinopoly |
| 5. Ramnad, Madura and Tinnevelly .. | Madura |
| 6. Coimbatore, the Nilgiris, Malabar and South Kanara .. | Coimbatore |
| 7. Madras .. | Madras |

## CHAPTER VII

## THE RURAL POPULATION

The total rural population of the State, including the States incorporated with it recently, according to the Census of 1941, was 41·9 million. This marked on increase of 1·1 million over the figure for 1931, and an increase of 7·6 million over the 1901 figure. Throughout the century the rural population has been increasing, and if the same rate of increase as prevailed between 1931 and 1941 be accepted as the rate which has prevailed subsequenly also, the population for 1948 may be roughly estimated at 42·7 million. This number forms about 84% of the total population which is lower than the Indian figure of 87%. But though lower than the Indian figure, it continues to be absolutely high and still shows the high degree of dependence of the people of the State on agricultural pursuits for a living.

It is not possible to state what percentage of this population is actually occupied in the work of pasture and agriculture as the occupational distribution of the population relating to the Census of 1941 was not published. To take the distribution of 1931 as applicable now will not be very realistic, for the intervening period of 17 years, too long in itself, witnessed the Great Depression and World War II both of which were quite unsettling in their effects. Still those are the only data available, and if we are to get a rough idea of the population engaged in agriculture, we have to fall back on them. Though not strictly applicable to the present day, the actual figures may not deviate very widely from the estimated figures based on that distribution, for general experience tells us that revolutionary changes have not taken place in the village life of the State. Village industries on the whole have been languishing in spite of determined efforts to resuscitate them, with consequent increase of pressure on agriculture. Here and there mechanized industry has made inroads into rural areas, but that has not been such a general feature as to reduce the pressure on land. Agriculture has continued to be the main prop of the rural population, but within agriculture itself certain structural changes have evidently taken place. The previously existing trends themselves may have carried out those changes without taking account of other phenomena which may have been superimposed on them. Thus, for instance, it is seen that the percentage

of the rural population occupied in pasture and agriculture as active workers has been steadily falling from 1901 to 1931. From 44·1% in 1901 it fell to 32·2% in 1931. In the same way the percentage figures relating to those occupied in cultivation fell from 43·2% in 1901 to 30·5% in 1931. Similarly changes are noticeable in the proportions that different agricultural classes bear to the total rural population. The proportion of non-cultivating proprietors and tenants and cultivating tenants increased in the first three decades of the century and then declined, whereas the proportion of cultivating owners steadily declined and that of agricultural labourers declined in the first three decades and then rose slightly. Some of these trends may have persisted subsequently too, while certain others may have been reversed, but in the absence of data it is not possible to say anything either way. The figures estimated for 1948 on the basis of the percentage figures of 1931 will not make any allowance for subsequent changes in these percentages, and so will be, to that extent, incorrect. Nevertheless, they will give a rough idea of the existing structure of the agricultural population. Table XIV gives figures relating to the occupational distribution of the rural population of Madras for the years 1901 to 1948.

The figures in the table relate to the population occupied in the various pursuits either as principal occupation, as working dependants or as subsidiary to other occupation, and do not include the non-working dependants in each class. On the basis of the estimated figures it may be said that there are at present 13·7 million people occupied in pasture and agriculture in the State, of which 13 million are engaged in cultivation. Of these 5·1 million are cultivating owners, 5·6 million, agricultural labourers, 1·7 million, tenant cultivators, ·4 million, non-cultivating proprietors and ·2 million, non-cultivating tenants. Half a million are engaged in stock raising and about 100,000 in the cultivation of special products. If allowance is to be made for the trends noticed in the decade 1921 to 1931 and supposed to have persisted since, the number of proprietors and tenants will have to be reduced and the number of agricultural labourers increased. These figures show that about 12·4 million actually labour on land, while a little more than half a million are rent receivers of one kind or other. The parasitic class in agriculture is less to-day than it was in 1921 when it exceeded a million mark, and tenant cultivators too are just half of what they were in that year. The decrease in these two cases is clearly noticeable in the decade 1921 to 1931, and if that tendency has persisted, their number to-day should be

less than estimated. This tendency superficially a good feature, is on further scrutiny seen to be deplorable, for the decrease here has not meant a corresponding increase in the number of cultivating owners or tenants, but rather in the number of landless labourers. Cultivating owners declined from 5·6 million in 1921 to 4·9 million in 1931, cultivating tenants from 3·3 million to 1·53 million, while agricultural labourers increased from 4·6 million to 5·3 million. The increase in the number of landless labourers has thus been at the expense of all other classes. Even so the increase here does not fully account for the reductions there, and so the obvious explanation is that part of the reductions there has been caused by an increase in the number of non-working dependents. The Census of 1931 revealed a predominance of aged people in this State as compared with the rest of India, and that may possibly account for the emergence of this phenomenon.

The owning classes form only 42·4% of those occupied in cultivation, landless labourers, 43·2%, and tenants, 14·3%. Among owners, cultivating owners predominate, being as high as 39·3%, and among tenants, the cultivators form 12·7%. Those actually engaged in field work are thus 95·2% of the occupied population. Though this percentage is high and would indicate a satisfactory state of affairs, still when their numbers are related to the total rural population, it is seen that they form only 29% of that population. Another 1·3% of the rural population is engaged in stock raising and forestry and an equal percentage perhaps in fishing and hunting. Altogether these pursuits absorb only a third of the population, and so, with the possible exception of those engaged exclusively in village industries and trade, two-thirds of the population are non-working dependents.

Non-working proprietors predominate in the districts of Guntur, East Godavari, Kurnool, Kistna, and Malabar where they form above 5% of the population occupied in cultivation, and are lowest in Madura, Salem and Trichinopoly, being less than 1·5%. In the ryotwari areas they are seen to abound in Tanjore, Chingleput, Tinnevelly and Nellore, all of which have over 4%. In these districts the zamindaries are few, and if in spite of it there should be quite a number of non-cultivating proprietors, almost as many as in the zamindari areas, it is a disquieting evidence of the unsuitability of even the ryotwari tenure and settlement to safeguard the ownership of land to the cultivator himself. Non-cultivating tenants are concentrated in three districts, South Kanara, Malabar and Vizagapatam. In twelve districts, there are none falling into this category, and in the rest of the districts, their numbers are

TABLE

*Madras*

Occupational Distribution

| Occupation | 1901 | Percentage of rural population | 1911 | Percentage of rural population | 1921 |
|---|---|---|---|---|---|
| Pasture and Agriculture .. | 15277978 | 44·1 | 15535619 | 42 | 14948221 |
| Cultivation .. | 14714061 | 43·2 | 14977306 | 40·3 | 14601035 |
| Non-cultivating Proprietors .. | 287342 | ·8 | 336924 | ·91 | 718241 |
| Cultivating owners .. | 7104264 | 20·6 | 6371392 | 17·2 | 5560774 |
| Non-cultivating tenants .. | 15203 | ·04 | 59181 | ·1 | 407796 |
| Tenant cultivators .. | 2214928 | 6·5 | 3099662 | 8·3 | 3280267 |
| Agricultural labourers .. | 5059298 | 14·7 | 5084985 | 13·7 | 4622565 |
| Estate agents, managers, rent-collectors, clerks, etc. .. | 33026 | ·09 | 25183 | ·06 | 11392 |
| Cultivators of special crops .. | 83979 | ·24 | 72367 | ·2 | 60694 |
| Population engaged in forestry .. | 4924 | ·01 | 40269 | ·1 | 32284 |
| Stock raisers and raisers of small animals and insects .. | 475014 | 1·2 | 351806 | ·9 | 254208 |
| Total rural population .. | 34327541 | | 36950684 | | 37489349 |

XIV

*State*

of Rural Population

| Percentage of rural population | 1931 | Percentage of rural population | 1945 (Estimated) | 1948 (Estimated) |
|---|---|---|---|---|
| 40 | 13167823 | 32·2 | 13630703 | 13739932 |
| 39 | 12470043 | 30·5 | 12911070 | 13014532 |
| 1·9 | 417826 | 1 (3·2) | 423314 | 426706 |
| 14·8 | 4861428 | 12 (39·3) | 5087434 | 5120471 |
| 1 | 204852 | ·52 (1·7) | 211657 | 221887 |
| 8·7 | 1531521 | 3·9 (12·7) | 1566261 | 1664153 |
| 12·3 | 5348942 | 13·2 (43·2) | 5597013 | 5632519 |
| ·02 | 24902 | ·06 | 25399 | 25602 |
| ·1 | 138136 | ·33 (1) | 139694 | 140813 |
| ·08 | 39869 | ·1 | 41061 | 42670 |
| ·6 | 519875 | 1·27 | 538878 | 541917 |
| | 40776965 | | 42331376 (1945)<br>41879082 (1941) | 42670597 (1948) |

negligible. South Kanara's case appears to be peculiar, for it has nearly 126,000 of these tenants, forming 31·9% of the population occupied in cultivation. Sub-infeudation appears to have been carried to an unprecedented length there.

Cultivating owners are relatively more numerous in Ramnad, North Arcot, Madura, Salem and South Arcot, all of which are above the 50% mark, with Trichinopoly, Chittoor and Chingleput closely following on their heels with percentages above 45. They are relatively lower in Malabar (9·2%), South Kanara (13·6%) and Vizagapatam (17·6%). Cultivating tenants predominate in Malabar and Vizagapatam with 38·7% and 30·6% respectively, while they are only 1·4% in Kurnool, 3% in Bellary, 3·3% in Nellore, 3·7% in Cuddapah, 4·1% in Guntur, 5% in Salem and below 10% in Anantapur, Madura, Chittoor, Coimbatore, Trichinopoly, Kistna, South Arcot, Ramnad and North Arcot.

Agricultural labourers form a goodly proportion of the occupied population in all districts, but in some the proportion is very much higher than in others. In no district does the percentage fall below 20, but in seven districts, all of them in the Telugu area, the percentage is above 50, and in nine more, between 40 and 50.

The occupational distribution of the occupied rural population in the State by districts according to the Census of 1931 is given in Table XV.

*Pressure of Population on Land*: The assessment of the pressure of population on land is a difficult process in any country, and is more so in any State in India to-day because of the paucity of data. As has already been explained, the number of those engaged in pasture and agriculture is not known, but estimates can be made on the basis of the 1931 census enumeration. Such estimates will not include the results of subsequent trends in the growth of population or alterations in the environment which have potent influence on human activity or employment, and so will have a broad and undetermined margin of error. Since however that is the only procedure open to the investigator, those estimates have to be adopted as the basis of calculation with all the errors they contain.

One way in which the pressure of population on land may be gauged is by relating the total population dependent on cultivation to the cultivated acreage, and measuring the pressure in terms of available acreage per head. Another method would be to relate the workers alone engaged in cultivation to the said acreage. Of the two, the latter in the proper measurement for assessing the

possibility of finding employment on land, while the earlier one measures the pressure on the subsistence from land. The two measurements may give divergent results. If the proportion that the workers bear to the total dependent population is low, a relatively low pressure as regards employment possibilities may coexist with relatively high pressure on the subsistence produced. In tracts of high density of population the pressure measured either way may be high, still there may be differences in degree. Both measurements are useful for different purposes, but primacy on general considerations should be accorded to the pressure on subsistence, for employment is not an end in itself, but ordinarily operates as the means for procuring subsistence. Heavy pressure either way is an index of the unsatisfactory nature of agriculture and the ill-balanced character of the economy; they proceed from the same disorder and are remedied by identical measures. But work itself is organized in farming with a view to maximizing the subsistence got from land and is adapted to the total number to be supported.

From the point of view of international or time comparisons the pressure on the subsistence got from land is a more illuminating measure. For instance, a comparison of India or China with France, where through the widespread practice of birth control by the peasantry, families are deliberately diminished in size, different results will be obtained if the two methods are separately applied. Again, in the same region at different periods differences in the average size of the cultivator's family may indicate an increase or decrease of pressure, while a corresponding indication may or may not be forthcoming under the other measurement. In the State of Madras, for instance, the average size of the rural family is seen to have increased from 5·2 to 6·2 between the years 1935 to 1945, and if this has been accompanied by a change in the proportion that workers bear to non-workers, as is most likely (no data are available to clinch this matter), the pressure on employment would not have altered in the same direction or degree as the pressure on subsistence.

So in what follows the first method, namely, the measurement of the pressure on subsistence is adopted. This is rendered a little more difficult than the adoption of the other by the fact that the Census enumeration of 1931 gives only figures relating to principal earners and working dependents, and not to non-working dependents. The difficulty cannot be overcome by assuming that the whole rural population is dependent on land for a living, for it is well known that many sections of that population earn their living

TABLE

*Madras*

*Occupational Distribution of Rural*

(With percentage that each class bears to the

| District | Rural population | Cultivation | Percent | Non-cultivating proprietors | Percent | Cultivating owners | Percent |
|---|---|---|---|---|---|---|---|
| Vizagapatam .. | 3331 | 1094 | 32·8 | 32 | 2·9 | 192 | 17·6 |
| E. Godavari .. | 1678 | 467 | 27·7 | 28 | 6 | 154 | 32·9 |
| W. Godavari .. | 1061 | 411 | 38·7 | 18 | 4·3 | 106 | 25·7 |
| Kistna .. | 1076 | 371 | 34·4 | 19 | 5·1 | 129 | 34·7 |
| Guntur .. | 1757 | 627 | 35·6 | 41 | 6·5 | 257 | 41 |
| Nellore .. | 1363 | 478 | 35·0 | 20 | 4·1 | 158 | 33 |
| Cuddapah .. | 863 | 270 | 31·2 | 9 | 3·3 | 96 | 35·5 |
| Kurnool .. | 967 | 350 | 36·1 | 20 | 5·7 | 117 | 33·4 |
| Bellary .. | 803 | 326 | 40·6 | 6 | 1·8 | 145 | 44·4 |
| Anantapur .. | 933 | 362 | 38·8 | 9 | 2·4 | 126 | 34·8 |
| Chingleput .. | 1387 | 351 | 25·3 | 15 | 4·2 | 159 | 45·3 |
| Chittoor .. | 1364 | 467 | 34·2 | 8 | 1·7 | 216 | 46·2 |
| N. Arcot .. | 1930 | 570 | 29·5 | 16 | 2·8 | 346 | 60·7 |
| Salem .. | 2239 | 733 | 32·7 | 9 | 1·2 | 422 | 57·5 |
| Coimbatore .. | 2168 | 608 | 28·0 | 12 | 1·9 | 249 | 40·9 |
| S. Arcot .. | 2215 | 657 | 29·6 | 12 | 1·8 | 336 | 51·1 |
| Tanjore .. | 1989 | 543 | 27·3 | 27 | 4·9 | 205 | 37·7 |
| Trichinopoly .. | 1643 | 611 | 37·1 | 8 | 1·3 | 302 | 49·4 |
| Madura .. | 1753 | 499 | 28·4 | 6 | 1·2 | 301 | 60·3 |
| Ramnad .. | 1446 | 401 | 27·6 | 9 | 2·2 | 272 | 67·8 |
| Tinnevelly .. | 1522 | 499 | 32·7 | 20 | 4 | 206 | 41·2 |
| Nilgiris .. | 115 | 18 | 15·6 | ·4 | 2·2 | 7 | 39 |
| Malabar .. | 3262 | 444 | 13·6 | 23 | 5·1 | 41 | 9·2 |
| S. Kanara .. | 1248 | 395 | 31·6 | 14 | 3·5 | 53 | 13·6 |
| Madras States .. | 374 | 148 | 39·5 | 5 | 3·3 | 94 | 63·5 |

XV

*State*

*Population by Districts*, 1931

Population Occupied in cultivation (in thousands)

| Non-cultivating tenants | Percent | Cultivating tenants | Percent | Agricultural labourers | Percent | Estate managers clerks, etc. | Cattle and animal raisers | Cultivators of special products |
|---|---|---|---|---|---|---|---|---|
| 33 | 3 | 335 | 30·6 | 441 | 40·3 | 12 | 69 | 19 |
| ·03 | — | 70 | 14·9 | 214 | 45·8 | ·9 | 19 | ·8 |
| ·004 | — | 48 | 11·6 | 239 | 58·1 | ·4 | 11 | ·1 |
| — | — | 30 | 8 | 192 | 51·7 | 1 | 18 | ·2 |
| ·08 | — | 26 | 4·1 | 302 | 48·1 | ·1 | 34 | ·3 |
| ·6 | ·1 | 16 | 3·3 | 282 | 59 | ·006 | 30 | ·6 |
| ·1 | — | 10 | 3·7 | 155 | 57·4 | ·001 | 15 | ·7 |
| ·3 | — | 5 | 1·4 | 208 | 59·4 | — | 11 | 1 |
| ·6 | ·1 | 10 | 3 | 165 | 50·6 | ·09 | 7 | ·2 |
| ·3 | — | 21 | 5·8 | 205 | 56·6 | — | 22 | ·5 |
| ·2 | — | 54 | 15·3 | 123 | 35 | ·03 | 15 | 3 |
| 1 | ·2 | 34 | 7·2 | 209 | 44·7 | ·02 | 32 | 1 |
| 4 | ·7 | 55 | 9·6 | 141 | 24·7 | ·02 | 28 | 2 |
| 2 | ·2 | 37 | 5 | 264 | 36 | — | 25 | 2 |
| 2 | ·3 | 45 | 7·6 | 300 | 49·3 | ·2 | 19 | 25 |
| — | — | 58 | 8·8 | 252 | 38·3 | ·07 | 16 | 1 |
| ·023 | — | 107 | 19·6 | 233 | 42·9 | 1 | 23 | 4 |
| ·002 | — | 48 | 7·9 | 253 | 41·4 | ·1 | 18 | 2 |
| ·7 | ·1 | 35 | 7 | 156 | 31·2 | 1 | 12 | 6 |
| 2 | ·5 | 34 | 8·4 | 83 | 20·7 | 2 | 18 | 3 |
| 2 | ·4 | 78 | 15·6 | 192 | 38·4 | 2 | 20 | 4 |
| ·004 | — | 3 | 16·6 | 8 | 44·4 | — | ·4 | 30 |
| 19 | 4·2 | 172 | 38·7 | 189 | 42·5 | ·2 | 4 | 23 |
| 126 | 31·9 | 49 | 12·4 | 152 | 38·4 | ·06 | 4 | 4 |
| ·019 | — | 13 | 8·7 | 36 | 24·3 | ·002 | 11 | ·2 |

in fishing and hunting, in village industries, in trade, in moneylending, in forestry and in cattle raising, none of which will strictly fall under the head of cultivation. But it is seen that the number occupied in rural occupations of all kinds excluding village industries, moneylending, trading, etc. formed a third of the rural population, and so this ratio of 1:2 between workers and non-workers may be adopted in cultivation too. In adopting this ratio the assumption made is that village handicraftsmen, moneylenders, etc. combine cultivation with those occupations and so figure as workers in cultivation.

On the hypothesis made above that earners form only a third of the population dependent on cultivation, the total population drawing their sustenance from land may be estimated at about 39 million. The net area sown to crops is about 31·66 million acres, of which 5·83 million acres are cropped more than once. Available net area then works out to 0·8 acre per head of the dependent population. This acreage is admittedly insufficient for giving an adequate sustenance to the dependent, for according to the calculations made by Dr. Radhakamal Mukerjee,[1] in monsoon Asia where double cropping is possible, 1 acre per head is the minimum required for subsistence farming. Prof. East calculating for Western countries has placed requirements at 2·5 acres,[2] but since soil, climatic and cultivating conditions there differ so widely from those prevalent here, his minimum will be inapplicable here. Another calculation for America places the minimum of 1·2 acres per head for the provision of a minimum subsistence diet in which cereals predominate.[3] For a more wholesome and liberal diet which contains more protective foods, yielding sufficient quantities of proteins, fats, vitamins and minerals, the requisite acreage is placed at 3. These estimates also, in view of the more mechanized methods, adopted in that country, will have little bearing on our requirements. S. Y. Krishnaswamy in Rural Problems of Madras (pp. 351 to 353) has calculated that for an acceptable minimum standard of life for a family of 5 there should be a wet acreage of 10 or a dry acreage of 15 to 20. This will work out to 2 wet acres per head or 3 to 4 dry acres. Judged by any standard therefore, the acreage available per head is clearly inadequate.

Conditions are however worse in some of the congested districts. In 12 districts of the State, the area per head is seen to

1. Food Planning for 400 Millions.
2. Quoted in Food Planning for 400 Millions.
3. E. O. Barker: Future of Farm Land (quoted in Human Nutrition and Diet by W. R. Aykroyd).

be lower than the State average, in three of them, viz, Vizagapatam, Salem and South Kanara, the figure being only 0·4 acres, just half of the State figure. In eight districts only is the acreage higher than the average for the State, but five of them are definitely dry areas, the Ceded Districts and Ramnad, and the other three are Guntur, Nellore and the Nilgiris. These higher figures however do not indicate a lighter pressure of population on land, except perhaps in Guntur and Nellore (the case of the Nilgiris being exceptional), for being for the most part dry areas, to draw an equal sustenance from land, a larger area is required. The table below gives the acreages available per head of the population dependent on cultivation, for all the districts of the State.

TABLE XVI

*Madras State*

Cultivated Acreage per head of the Rural Population

| District | Estimated rural population 1948 | Population occupied in cultivation | Net area sown—average for 1940-45 acres | Acreage per head in cultivation |
|---|---|---|---|---|
| Vizagapatam .. | 3558 | 1167 | 1540 | ·4 |
| E. Godavari .. | 1858 | 514 | 1050 | ·6 |
| W. Godavari .. | 1211 | 469 | 870 | ·6 |
| Kistna .. | 1312 | 451 | 1170 | ·8 |
| Guntur .. | 2047 | 729 | 2090 | ·9 |
| Nellore .. | 1534 | 537 | 2050 | 1·2 |
| Cuddapah .. | 1019 | 318 | 2320 | 2·4 |
| Kurnool .. | 1015 | 366 | 1950 | 1·7 |
| Bellary .. | 881 | 358 | 1030 | ·9 |
| Anantapur .. | 1096 | 425 | 1290 | 1 |
| Chingleput .. | 1601 | 405 | 740 | ·6 |
| Chittoor .. | 1659 | 567 | 1330 | ·8 |
| N. Arcot .. | 2346 | 692 | 780 | ·5 |
| Salem .. | 2811 | 919 | 1150 | ·4 |
| Coimbatore .. | 2564 | 718 | 1700 | ·7 |
| S. Arcot .. | 2430 | 719 | 1720 | ·8 |
| Tanjore .. | 2248 | 614 | 1320 | ·7 |
| Trichinopoly .. | 1998 | 741 | 1360 | ·6 |
| Madura .. | 1959 | 556 | 1270 | ·7 |
| Ramnad .. | 1600 | 442 | 1240 | ·9 |
| Tinnevelly .. | 1782 | 583 | 1240 | ·7 |
| The Nilgiris .. | 165 | 26 | 100 | 1·2 |
| Malabar .. | 3779 | 514 | 1570 | 1 |
| S. Kanara .. | 1469 | 464 | 570 | ·4 |
| Madras States .. | 423 | 167 | — | — |

Insufficiency of land has direct effects both on the subsistence secured and the opportunity for employment. Subsistence is affected in a double way; first, it tends to be insufficient whatever kind of crop is raised, and secondly, it tends, if food crops are raised, to be completely made up of carbohydrates. The "food energy per unit of land"[4] is greater when carbohydrates or grain crops are raised than under protective foods such as fruits or vegetables, milk or meat. Through the implementation of a high degree of intensification, food energy per unit may be increased, but the small holders of the State having only labour at their disposal and lacking other requisites of scientific farming, invariably find that this possibility is ruled out in their case. Even the more well-to-do succeed in securing a quantitatively sufficient diet through the sacrifice of quality, and consequently suffer from malnutrition. The pressure of population being so great, land values rise with every increase in that pressure, and the little capital which even the more well-to-do cultivators have for investment, goes to the purchase of land, leaving little for expenditure on seed, manure, cattle, irrigation, drainage, etc. The crops raised thus tend to be just those which the land in its impoverished state, with small additions of manure, produced on the farm itself, can quantitatively maximize. This has effects not only on the diet of the cultivators themselves, but also on that of the larger body of consumers. Even those among them who are able and willing to include a larger proportion of the protective foods in their diet, find the prices of such foods too high, owing to low production, to give effect to their desires. The low milk production of the State and the paucity of fresh fruits and vegetables have all to be attributed to the dearth of land area. Though India has the largest cattle population in the world and the State has its share of that population, the bulk of them are kept, as in China, for draught and not for milk purposes. Such milk production as takes place in rural areas is incidental to arable farming, and for that reason is poor both in quantity and quality.

Difficulties of finding full employment for the workers in cultivation is the other manifestation of the pressure of population. The land area per worker will of course be greater than the acreage per head of the dependent population, but even that larger area in this State is insufficient to provide employment for all those seeking it.[5] Two results proceed from this state of affairs, wide-

4. W. R. Aykroyd, Human Nutrition and Diet.

5. This matter is treated in detail in the chapter on Labour in Agriculture.

spread under-employment in the agricultural classes, and sub-infeudation and rack-renting of a high degree. That under-employment is widely prevalent in Indian agriculture is such a commonplace that nothing need be said to make the point, but that sub-infeudation too is a direct result of this pressure is not so well understood. The inordinate demand on the part of prospective cultivators for land gives the opportunity to owners to extract from the tenants, rents which have no relation to the earning capacity of land. It becomes then more profitable for the owners to lease out the land and receive a rack-rent than cultivate it themselves and enjoy the profits of cultivation. Many tenants too are faced with the same alternatives and make an identical choice. They sub-lease the land rather than cultivate it themselves. This can be the only explanation for the existence in the ryotwari areas of the State of quite a number of non-cultivating tenants. In the zamindari and janmi areas their existence is the peculiar offshoot of the system of tenure, but in the ryotwari areas their existence would appear to be strange, were it not the result of this phenomenon. In South Kanara, for instance, we have the largest percentage and absolutely the largest number of non-cultivating tenants, and this is quite explicable in view of the fact that in no other district of the State is the pressure of population on land heavier.

The pressure on land for employment also gives rise to a situation where much resistance is offered to any effort in the direction of mechanization of cultivation or the introduction of labour-saving technique or organization. Displacement of labour under mechanization, as has been proved in American agriculture, is so great that in a densely populated country like India its advent is bound to be a national disaster. So apart from its suspected long run baneful effects on soil fertility, its short run effects on the employment situation will rule it out of court for some decades to come, except in the cultivation of new areas where mechanical methods alone appear possible. In the existing occupied area, improvement can only take the form of more intensive scientific culture, which will mean an intensive use of labour along with a larger investment of capital. Employment difficulties are likely to be caused even through the introduction of an improved scale of production. The consolidation of holdings and the organization of co-operative farming, urgently needed in Madras agriculture to increase the yield from land and reduce the costs of cultivation, will, if implemented, throw out of employment a percentage of the existing occupied population. On a rough estimate, an half an acre increase in the size of the area per worker, effected through better organization, would mean unemployment for 17% of the

occupied population. Like the Chartists of England the cultivators of the State naturally look upon all innovations in technique and organization as inimical to their perceivable interests.

The unemployment that innovations create, if evenly distributed among the community, will not be such a bad feature as may appear at first sight. The quantum of wealth produced will be greater than the old quantum, and if distributional effects do not follow the alteration, each family, though it may have a member or two unemployed, will have a larger quantity of wealth for consumption. And if, further, the unemployed persons eventually get absorbed in new industries or on new land brought under the plough, both national and family income will increase and dispense all-round prosperity. But the danger here is that absorption of the unemployed in the new ventures will not be easy, unless an expansionist economy is planned and some training is given to them, and that alterations in technique or organization are not without their distributional effects. Unemployment will not be evenly distributed, but, on the other hand, will be concentrated on whole families belonging to the labouring classes, which will deny them a claim to a share in the increased wealth produced by the community. Those who keep their employment and those who own the means of production will enjoy in larger measure the fruits of these innovations. The close association of the progress of capitalism and its ever widening inequality with improvements in technique and organization is thus explained.

If the pressure on land at present is heavy, in the future, on all showing, it is likely to be heavier. Existing trends in population growth indicate a more rapid increase in the future and a more than corresponding increase in the working population. The age composition of the 1931 population and the steady fall in mortality rates are both designed to raise the proportion of the population in the working age groups. Prof.. D. Ghosh has calculated [6] that in the next 20 years there will be an addition of nearly 30 million workers to the Indian population. This figure applies to undivided India. This State's quota of it will be roughly 4 to 5 million. The greater proportion of it, in the absence of any spectacular increase in industrialisation, will seek absorption in agriculture and contribute to an increase of pressure there. To divert this pressure into new channels by opening up unexploited resources and creating new avenues of employment, will be the real problem of the future.

6. Pressure of Population and Economic Efficiency in India.

CHAPTER VIII

## AGRICULTURAL LABOUR

One of the greatest handicaps under which an investigator into the conditions of agricultural labour in Madras has to work, is the lack of reliable data. It is a lack which vitiates the study of all economic problems in this country, but is more remarkably so with regard to agricultural labour in the State. Very little attention indeed seems to have been given to this problem anywhere in India, and even the Royal Commission on Agriculture which conducted the most thorough and the most authoritative investigation into agricultural conditions, gave only a cursory treatment to it. In the questionnaire issued by the Commission the few questions pertaining to it dealt only with the migration of labour. Among the written memoranda submitted to the Commission, only two attempted answers to these questions, and only one of them, viz. the memorandum submitted by the Commissioner of Labour, Mr. Paddison, had anything of value to say. In oral evidence too, his testimony stood out alone.

The need therefore undoubtedly exists for the conduct of as thorough an enquiry as is possible into the conditions of agricultural labour, especially of the State, and the all-India enquiry being conducted by the Labour Department of the Government of India at present has not come a day too soon.

In the meantime however the best use has to be made of the slender data available.

Agricultural labour is provided not only by agricultural labourers, properly so called, but also by large numbers of owners and tenants. Agricultural labourers themselves fall into two classes, full-time agricultural labourers and those who hire themselves out occasionally. In 1931, according to the Census enumeration of occupational distribution of population, 94·3 per cent of the population occupied in cultivation contributed to the requirement of field labour in farming, either as full-time labourers or as subsidiary to other occupations. Full-time labourers formed 90% of the occupied population, and in absolute figures numbered 11·1 million persons. The population occupied in cultivation formed 30·4% of the total rural population, and so the full-time labouring population formed 27·3% of the total rural population. At the present time the situa-

tion may be slightly different, but since no data are available to go upon, the 1931 distribution has really to serve as the basis of calculation. This may vitiate the result, but not appreciably enough to render it altogether useless.

On the assumption that the proportion of the total population occupied in cultivation to the total rural population is the same today[1] as it was in 1931 and the rate of growth has been the same as existed between 1931 and 1941, the total population occupied in cultivation may roughly be estimated for the State at 13·5 million persons. 90% of this number, or 12·1 million persons, are actually engaged full-time in the manual work of cultivation, either as owner cultivators, tenant cultivators or agricultural labourers. If those who adopt labour as a subsidiary occupation are also included, the number will be 12·7 million. If full-time agricultural labourers[2] alone are considered, they form 42·3% of the occupied population, and another 0·6% work as agricultural labourers subsidiary to other occupations. In absolute numbers full-time agricultural labourers come to 5·5 million and with the others included, to 5·6 million. These figures show that owner cultivators and tenant cultivators outnumber landless labour, as is only to be expected in a country of small holdings. It is also clear, comparing the figures for 1921 and 1931, that agricultural labourers proper have been increasing at the expense of working tenants. In the Census Report[3] it was stated that agricultural labourers in 1921 formed 317 out of every 1000 occupied in cultivation. This proportion is seen to be less than the 42·9% of the Census of 1931. Possibly when actual data become available it may be seen that between 1931 and 1941 and subsequently too, the percentage has been increasing, but in the absence of data, nothing dogmatic can be said. It may however be safely asserted that between 1921 and 1931 the labour force working on the land increased from 90% to 94·3% of the occupied population, if we include among the labourers those who put in field labour subsidiary to other occupations. But this increase of 4·31% does not explain the 11% odd increase in full-time agricultural labourers alone, and so it has to be concluded that in addition to the decline in the percentage of non-working proprietors and tenants, the percentage of tenant workers too has been diminishing. This is regret-

1. 1948.

2. By agricultural labourer is meant landless labourer engaged in cultivation.

3. Madras, p. 198, 1931.

able, for it means that landless cultivators are increasing at the expense of those categories of landed interests who have a stake in land and agricultural productivity.

The position in this State has not however been so deplorable as in Bengal, where both non-cultivating landlords or rent receivers and landless labourers increased at the expense of cultivating owners and tenants, between 1921 and 1931.[4] Still the process of conversion of working tenants into full-time agricultural labourers, noticed in this State, is detrimental to the interests of cultivation and is not fully compensated by the decrease in the number of non-working proprietors and tenants. Doubtless, the line of demarcation between tenants at will and agricultural labourers is blurred in many localities of the State, in many cases the tenants being no better than labourers. They belong to the same castes and contribute nothing but their labour to the work of farming and get a small share in gross produce, almost equal to wage payment made to the other class. They too should be added to the number of landless proletariat in order to gain an idea of the true state of affairs in the State. The Census return puts them into the category of tenants for the reason that they style themselves as such, consistent with the vanity in human nature to assume the highest status possible under the circumstances.

*Acreage per labourer*: At the present time, on the assumptions made above, full-time labouring population works out to a ratio of one labourer to 3 acres of gross area sown and 2·6 acres of net area sown. If landless labourers alone are taken into account, the ratio will be one labourer to 6·6 acres of gross area sown and and 5·6 acres of net area sown. This may appear to be a higher ratio than one labourer to 4 acres of net area sown, worked out for agricultural labourers in 1921.[5] In reality however the figures are not strictly comparable, for the classification adopted in 1921 was different from the one adopted in 1931. A distinction was then made between farm servants and field labourers, and in working out this ratio farm servants numbering nearly 2·9 million were included. In the 1931 classification farm servants very probably came under the working dependents of all the other classes. Field labourers were, in 1921, 5·3 million and if this figure alone is considered the ratio will be 6·2 acres of net area sown per labourer. The net area sown itself was in 1921 higher by nearly a million

4. Bengal Census Report.

5. Written Memorandum of Paddison—Royal Commission on Agriculture.

acres than in the quinquennium 1940-45. Pressure of labourers on land has thus been increased by an increase of landless labourers and a decline in the net area cultivated.

*Districtwar distribution of total labouring population*: The districtwar distribution of the labouring population is seen to be very uneven when it is related to the acreage under cultivation. The total population engaged in actual labour on the farm, including working proprietors, working tenants and hired labourers, both full-time and part-time, is highest in the district of Vizagapatam where it is over a million, and lowest, excluding the Nilgiris, in S. Kanara where it hardly exceeds 300,000. Among the other districts, the Ceded Districts have a comparatively lower population, as also Ramnad and Chingleput. The case of Chingleput is easily explained by the fact that it is a small district, and the only satisfactory explanation for the other cases is that, being the drier regions of the State, they have either smaller rural populations or a smaller percentage occupied in cultivation. In all the districts, except S. Kanara and Vizagapatam, the percentage of occupied population actually labouring on the field is well over 90. In Vizagapatam it is 89, but in S. Kanara it is as low as 65. S. Kanara's case calls for special notice. This is the only district which represents a wide departure from the normal. The reason, as the Census figures obviously show, is the existence in the district of a phenomenally large number of non-cultivating tenants. In 1931 out of the 198,000 non-cultivating tenants in the Presidency, 123,000 were in S. Kanara. Vizagapatam and Malabar between them had about 50,000 and the rest of the districts had a few hundreds or a few thousands each. The comparatively larger size of the average holding there (7·15 acres) and the greater predominance of fruit and cocoanut culture in her farming may possibly account for this abnormal phenomenon. In a lesser degree this seems to be true of Vizagapatam and Malabar too.

The highest percentages of labouring population are seen in Chittoor, the Nilgiris, Salem, South Arcot, Trichinopoly, Madura, Bellary, Anantapur, Chingleput and Ramnad. (Detailed figures are given in Appendix IV.)

*Distribution of landless agricultural labourers*: Vizagapatam possesses the largest number of landless agricultural labourers (457,000) and, excluding the Nilgiris, Ramnad, the lowest (84,500). (Figures relating to the other districts are given in Appendix). Agricultural labourers form only 20% of the total population occupied in cultivation in Ramnad, which is the lowest percentage for the whole State. North Arcot too has as low a percentage as

24·5 and Madura, 32. All the other districts have above 35, and the Ceded Districts, Nellore, Kistna and West Godavari have percentages of 50 and more. As a rule it is in those districts which are favourably situated for emigration into Burma, Malaya, Ceylon, etc. that smaller percentages are seen. The question therefore arises whether it is really the surplus which emigrates from this country or whether through their departure à dearth of labourers is created in those localities.

In many of these districts however the paucity of agricultural labourers seems to be made up by the labour contributed by owners and tenants, for the acreage of net area sown per labourer (including all varieties of labour) is very low in most of them. In North Arcot and Chingleput it is as low as 1·7 acres and 1·9 acres. In Vizagapatam and West Godavari it is 1·4 and 1·9 acres. In Chittoor it is the lowest in the State, 1·3 acres. In the Ceded Districts it is higher, ranging between 3·3 acres in Cuddapah and 6·4 acres in Bellary. Fifteen districts in all have acreages below the State average of 2·4 acres. Except in the Ceded Districts and Malabar, it is below 3 acres and in ten districts below 2 acres per labourer. There is therefore the clearest indication that there is no dearth of labour anywhere, but on the other hand, too great a pressure in many localities. The acreage per landless agricultural labourer is higher, 5·6 acres for the State and not lower than 3 acres in any district. Ramnad has the highest, 13·7 acres per labourer, evidently because of the smaller percentage of landless agricultural labourers there. Since however these are not the only ones engaged in actual labour, these figures are not so significant as the earlier ones.

The disparity as between the districts in the cultivated acreage per labourer shows that labour pressure is great in the State as a whole and that that pressure is unequally distributed. In at least 10 districts, not all of them delta districts, the acreage goes below 2 acres, unmistakably indicating a wasteful use of labour. Far from there being any labour shortage, what actually exists is that the *available labour power can cultivate a very greatly increased total* acreage. If in those 10 districts alone the average acreage per labourer is raised to 2·5 acres, which is about the same as the State average, an additional 5 million acres can be brought under cultivation, without necessitating any increase in the labour force. In wet cultivation, area per labourer is bound to be lower than in dry cultivation, still even there the target figure of 2·5 acres will not appear to be impracticable. At present, due to the wide prevalence of small and scattered holdings, the labour force has to be

larger than necessary, but any improvement effected in the organization of cultivation, through the reconstitution of uneconomic into economic holdings, will simultaneously make an extension of cultivation possible.

*Men and Women Workers*: According to the Census of 1931, the ratio of men workers to women workers among the labouring population in cultivation was 8·2 million to 3·3 million. Among agricultural labourers proper the numbers were more or less even, with the women slightly outnumbering the men, 2·54 million women as against 2·51 million men. Among the other two classes, viz. owner cultivators and working tenants, the number of women fell far below this ratio. With working tenants it was 1·22 million for men and 0·19 million for women and with owner cultivators 4 million for men and 0·65 million for women. In economic condition owner cultivators are not very different from agricultural labourers, for it is only the smaller holders who actually work on the farm, and they have as a rule as low incomes as the hired labourers. That circumstance probably accounts for the higher ratio of women workers among them than among working tenants. Many working tenants too are as badly off as agricultural labourers or small holders, and so it is a little surprising that women workers among them should be so low in proportion. The conclusion that may be drawn from this is that the majority of working tenants are more well-to-do than the other two classes.

It is undoubtedly a matter of common knowledge in India, that as the material circumstances of a family improve, the women folk are relieved of their outdoor work. If this should happen on a large scale, there might be an appreciable reduction in the labour force available, and therefore the question, whether the effective supply of labour will be adequate or not for the purpose of cultivation, will assume a different aspect under re-organization of farming operations. At the present time, on the assumption that the same ratio of men to women workers exists as existed in 1931, the estimated labouring population of 12·73 million will comprise 9·08 million men and 3·65 million women. Of these 3 million odd women, 2·8 million or thereabout belong to the agricultural labourer's class and the rest to the other two classes. The maximum number which may be withdrawn from work will not therefore exceed a million. This reduction spread over the whole State and accompanied by a re-organization of cultivation which will make a larger acreage available to each labourer, is not likely, in the final upshot, to cause a dearth of labourers. However in formulating a plan of agricultural expansion this well-known tendency

should be properly allowed for. During the war period, in urban areas and possibly in rural areas too, large numbers of women workers actually withdrew their labour from the competitive field, owing to just this phenomenon of an upward alteration in material circumstances, caused by the higher rates of remuneration secured by their men folk in war and industrial work. This same tendency may be manifested in land reclamation and colonization societies too which attempt to settle landless labour in cultivable waste as holders of land. The remedy for this would appear to be the association of the women folk too in equal partnership with the men in the societies and the basing of the allocation of acreage to the societies on the number of total workers available. The provision of subsidiary occupation for the women folk, such as, dairying poultry farming, pig keeping, etc. will also prevent their lapsing into a state of 'conspicuous or vicarious leisure'.

*Hired Labourers and Farm Servants*: Agricultural labourers designated as such fall into two categories, hired labourers and farm servants. Hired labourers are hired by the day on the basis of a wage in kind or in money, especially during the busy seasons. Farm servants on the other hand are permanent servants attached to the farm and receiving remuneration on a monthly or annual basis. Such servants can be employed only on the larger farms where the owners or tenants who get them cultivated do not as a rule work themselves. The number on each farm will be regulated by the work to be carried out during periods of minimum work, the cultivators depending on hired labourers to do the additional work in the busy seasons. Some of these farm servants permanently attached to the soil are for all practical purposes territorial serfs transferable with the land itself.

How many of these farm servants are such serfs and how many free, but engaged by the year for work on the farm, it is impossible to decide. The name Panniyal or Padiyal by which the serfs were originally called in Tamil districts, is applied to almost all farm servants, probably because of similarity in some respects with the serfs, and that fact has evidently given rise to the belief that all of them are serfs. Panniyals exist in almost all Tamil districts, and in the Telugu area they go by the name of Gassi-gullu. In the Tamil regions the farm servant has had his origin in serfdom, but whether the same is true of the Telugu region cannot be dogmatically stated. At the advent of the British into India, serfdom in the Telugu area is reported to have been in a weak state. Many of these servants today are engaged on the basis of an annual contract which is reported to terminate in

Andra Desa on *Eruvaka Pournami day.*[6] Renewal of these contracts is probably automatic, one of the *defacto* vestiges of the earlier serfdom days. But the fact of annual contracts, the presence among farm servants of caste Hindus and the practice of paying them in money, e.g. in Trichinopoly, militates against the view that they are all serfs attached to the soil.

In addition to these free farm servants there still exist quite a number of serfs especially in the Tamil districts of Tanjore and South Arcot. In the Resurvey of Palakkurichi in Tanjore district and Eruvellipet in South Arcot district in 1939[7] the existence of panniyal and padiyal families was clearly discovered. According to that Resurvey the custom of indenturing oneself for an indefinite period to a landowner, on the basis of a bond, in return for a loan received from him for a marriage or like purpose, still exists. The loan taken ranges from Rs. 30 to 75 and in return for it the borrower executes a bond to serve as padiyal till the loan is repaid. Repayment is most difficult for him out of his subsistence earnings, and so once he signs away his freedom, he continues to be unfree for the rest of his life. Rarely is it possible for a padiyal to earn enough by work on a neighbouring landlord's fields or in the neighbouring taluk to repay the loan. Such procedure is discountenanced by the master who naturally wishes to retain his hold over him. Still cases are reported where padiyals have freed themselves that way.

When the bond is executed by the padiyal, another has to sign as surety, and in the event of the padiyal himself not being able to discharge the terms of the bond, the surety has to discharge them. The bond gives the right to the master to pursue the padiyal and bring him back to the farm if he should run away. The bond of slavery is however not enforceable in a court of law, but custom is strong even today in the villages of this country and the labourers are so helpless against the lords of the land that from hereditory habit and to a certain extent from self-interest, the padiyal remains a willing *defacto* slave.

For the work he does on the farm, he gets paid according to the work done, in Tanjore at the rate of 2½ measures for every kalam reaped by him and a midday meal at the master's house. He is entitled also to kalavasam, i.e. grain collected from the

6. Presidential Address, Second Agricultural Labourers' Conference, by B. P. Sitaramayya — *Rural India*, May 1940, p. 289.

7. Resurvey of Some South Indian Villages — Thomas and Ramakrishnan,

threshing floor at each of the harvests and also to one cloth a year at Pongal or Deepavali or Re. 1 in lieu of it. On the occasion of a marriage or child birth or death in the master's house he is entitled to certain perquisites regulated by custom. He gets a cloth at a marriage, annas 4 to 8, some paddy and some oil at a child birth and Re. 1 and some paddy (12 measures) at a death. At Deepavali and Pongal in addition to the cloth, he gets also a present of 1½ to 2 annas. In all he will get about 60 kalams of paddy and ragi and a few rupees. He lives on the land of his master in a hut built for him by the landlord and regularly carries on work from 5 o'clock in the morning till evening, with intervals for morning kanji and midday food. Some land may be given to him for cultivation, for his maintenance, but the area hardly exceeds 1/4 of an acre. The expenses of cultivation are usually borne by the landlord.

The old rigour attached to the system has certainly been mellowed by the strength of public opinion against it and the facility offered the Padiyal by modern improvements to cast off the yoke of bondage. Still the vestiges of the old system exist in the two districts aforementioned, making life a misery and a burden to some sections of the labouring class. In Pallakkurichi in 1939 there were 95 Padiyal families and in Eruvellipet, 85 families.

In the matter of remuneration, other farm servants too have the customary rates of wages paid to them, and in view of their origin and history and the nature of work they do, the customary rate applicable to them cannot be very different from the one applicable to the panniyal serf. In the case of caste Hindus who could not have had the same origin as the Harijan farm servant, it was found in the Resurvey of the Village Venugutla in North Godavari district, that payment of the perquisites was not based on custom, but agreed upon before hand.

Hired labourers are unattached to any farm and are usually engaged by the day during the busy agricultuarl seasons, such as, ploughing, sowing, transplanting and reaping seasons, on a money rate of wages paid in money or in kind. These, as the Census figures show, are more numerous than farm servants, almost double, and have their numbers increased through the addition of those who adopt field labour as their subsidiary occupation. As a rule they are drawn from the same castes as farm servants, Pallans and Paraiyas in Tamil Nad, Pullayas and Cherumas in Malabar and Malas and Madigas in Andra Desa. In recent times owing to economic distress and the loss of holdings, some caste Hindus too, both

men and women, have been compelled to turn agricultural labourers. Still the bulk of them are even today drawn from the depressed classes.

While in employment they do much the same kind of work as farm servants and are treated in the matter of feeding like them. The wages they receive are ordinarily higher than those paid to permanent servants and comprise a greater proportion of money payments. The rate of wages varies widely from locality to locality and is regulated as much by custom as the payments to the farm servants. But there is the formality of an oral contract on engagement which safeguards to the labourer his freedom of movement and employment and restricts the responsibility of the employer to discharge of the terms of the contract. Wage rates, whether paid in money or its equivalent in grain, used to vary in pre-war days from one anna a day to 2½ annas to 4 annas a day ordinarily and during the harvest season to rise as high as 6 annas a day.

During the depression years wages were low and fairly approximated the figures given above. But with the first signs of the revival of prosperity, wage rates given to hired labourers seem to have improved. According to the Economist who conducted the enquiry into the rural indebtedness of the Madras Presidency in 1945, even in 1939 wages were at a higher level than the ones quoted above and during the war period they rose still higher. The figures he has given for ten zones into which the State is divided for 1939 and 1945 are given below:

TABLE XVII

*Wage Rates in 1939 and 1945*

| Zones | Male | | | | Female | | | | Boy | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1939 | | 1945 | | 1939 | | 1945 | | 1939 | | 1945 | |
| | As. | Ps. | As. | Ps. | As. | Ps. | As. | Ps. | As. | Ps. | As. | Ps. |
| I .. | 6 | 6 | 12 | 0 | 3 | 0 | 6 | 6 | 3 | 0 | 6 | 6 |
| II .. | 7 | 4 | 19 | 0 | 5 | 2 | 13 | 4 | 3 | 8 | 12 | 8 |
| III .. | 8 | 0 | 16 | 0 | 6 | 0 | 12 | 0 | 4 | 0 | 10 | 0 |
| IV .. | 4 | 3 | 14 | 6 | 3 | 0 | 11 | 0 | 2 | 3 | 8 | 0 |
| V .. | 7 | 0 | 17 | 0 | 7 | 0 | 13 | 0 | 7 | 0 | 11 | 0 |
| VI .. | 5 | 4 | 13 | 6 | 3 | 0 | 7 | 0 | 2 | 7 | 5 | 8 |
| VII .. | 5 | 5 | 15 | 8 | 3 | 2 | 9 | 7 | 2 | 4 | 6 | 9 |
| VIII .. | 12 | 0 | 22 | 0 | 6 | 6 | 11 | 0 | 4 | 6 | 9 | 0 |
| IX .. | 5 | 0 | 13 | 0 | 2 | 9 | 8 | 6 | 2 | 9 | 7 | 6 |
| X .. | 4 | 6 | 17 | 0 | 3 | 0 | 9 | 0 | 2 | 3 | 7 | 0 |

These figures show that all over the State wages rose during the war period 100% and more and they are today maintained at that high level. In comparison with the rise in the cost of living, this rise may appear to be insufficient, but it must at the same time be borne in mind that agricultural labourers receive part of their wages in kind and get also a free meal a day when employed, that the index figure of cost of living will not directly be applicable to them. When grain prices rise the employers may find it more profitable to them to pay money wages rather than grain wages, and the tendency will unmistakably exist for converting the latter into the former. To what extent such a tendency exists in the State is not known.

*Migration of Labour* : Being unattached these labourers experience irregularity of employment, and during the off season in agriculture have to migrate to the urban areas or to the plantations in search of work. In certain areas, as for instance Malabar, the male worker alone migrates, but in others whole families do so. Seasonal migrations of agricultural labourers are quite a normal feature of our rural economy, and some of the migrations take them as far away as 50 to 60 miles from home. By harvest time they return to their homes. In the delta regions of Kistna and Godavari a dearth of labourers during transplantation and harvest time is clearly perceptible, and in addition to the return of the home labourers, quite a number come down from the hilly regions of the Agency tracts to take advantage of the work on offer.

In addition to seasonal short-period migrations there are also annual quasi-permanent migrations, assisted and unassisted, to the plantations in India and abroad and to such countries as Burma, Malaya, Ceylon, East Africa, the East India Islands, etc., which cause a dearth of labour in those districts favourably situated for such migrations. In the Resurvey of Vadamalaipuram in Ramnad district and of Gangaikondan in Tinnevelly district it was found that a scarcity of labour is caused by such migrations and as a result even the more well-to-do owners have been compelled to put in manual labour on the farm.

Seasonal migration of agricultural workers to urban areas in the off season in agriculture and back again to the villages during the busy seasons is not peculiar to this State or to this country, but is seen to widely prevail in Eastern and Central Europe, where the labourers cross the frontiers of their own lands in search of work. This kind of migration helps to more evenly distribute the work to be done in rural and urban areas and effects a fuller and

more economic utilization of the available labour force. The urban seasonal industries, such as rice milling, sugarcane crushing, cotton ginning, etc., usually can start work only after agriculture has produced their raw material, and the employment of the same set of workers in agriculture and in such industries effectively contributes to the solution of the problem of under-employment in agriculture and in those industries.

The more permanent migration to the plantations and to foreign countries is partly the consequence of the pressure on the land, which during the last few decades has been growing in this country, and partly also that of the offer of more attractive terms there. The foreign countries to which such emigrants went undoubtedly served as outlets for the overflow populations of rural areas in India and in turn benefited from the skilled and unskilled work turned out by them. Recently however the emigration of unskilled workers has been stopped even to Malaya and Ceylon, and this circumstance is likely to have significant repercussions on the agricultural labour situation in Madras.

*Quality of Labour*: A quantitative study of agricultural labour reveals that in most of the districts of the State labour is adequate, not only for the cultivation of existing acreages, but also for an increased acreage re-organized to form compact economic holdings. But whether the quality of that labour is such as to lead to comparable efficiency with the other States in India or other countries is hard to determine. In his knowledge of the art of cultivation the Madras cultivator has not perhaps much to learn from others. The empirical traditional lore he has, can hardly be improved upon, taking into account the physical and environmental conditions under which he has to work. Foreign observers, beginning with Dr. Voelkar, the Italian Agricultural Expert, have all without exception testified to the high standard of his art. The peculiarities and requirements of different crops, the deficiencies of different soils, the necessity for the employment of different kinds of manures, the need for rotation, the advantages of transplantation, all these and more are common knowledge with the cultivators of Madras, to which the scientific department of agriculture of the State has been able to add little during the half century of its existence.

The trouble with the labourer is evidently not lack of knowledge, but lack of effort. Gilbert Slater, writing in 1917, caustically remarked that the Madras labourer took a week to do the work

which an English labourer did in a day.[8] Observers of plantation labour in Ceylon and Malaya too have also had reason to write about the lower standard of effort put forth by the Indian labourer compared with the Chinese. Since in both these countries the Madras labourers predominate among the Indians, the remark is of special applicability to this State. It is quite true that comparisons as regards efficiency or productivity, unrelated to the aids and incentives of productive effort, are difficult to make. These aids and incentives differ so widely from country to country and from one environment to another that the basic conditions of work lose the quality of comparability. Still the standard of effort is in some respects and some dimensions a measurable factor and may be isolated from the others, as for instance, the time spent at work, the number of hours per day or days per week, and on this basis a legitimate and useful comparison can be made. Thus it is seen that Indian labourers in the plantations of Malaya work less hours per day or per week than the Chinese, employed under identical conditions of work. Even here an explanation in terms of physical or pathological differences, such as, under-nourishment or the presence of incipient or corroding diseases may contain more of truth than one that is based on temperamental peculiarities. Within the State, at any rate, poverty and under-nourishment, the drink habit, the wide prevalence among field workers of malaria and hookworm disease, the intermittent periods of unemployment generating habits of indolence and the leisurely pace of work, born out of a lack of urgency in the matter, are admittedly the real causes of this low standard of effort. Both the ability and the willingness to put forth a high standard of effort are lacking. During the war period a noticable tendency to work for fewer days in the week as a direct consequence of the higher wages received, existed all over the State.

The low standard of effort is accompanied in this country and in this State by a low rate of productivity too, as is evidenced by the phenomenally low rates of yield per acre in almost every crop. Yield per acre is, of course, not directly a measure of the productivity of labour, but in intensive cultivation the only way of increasing yield per man is by an increase in yield per acre, and so a low yield per acre is an indirect index of low yield per man. The reason for this low productivity, apart from the low standard of effort, is the inferior efficiency of the material factors co-operating with labour in the work of production. With unmanured soils,

8. Some South Indian Villages.

emaciated cattle, inefficient tools and implements, an irregular and uncertain supply of water and uneconomic holdings, the cultivator cannot work wonders. The substitution of these ineffective aids to production by superior factors is a pre-condition for an improvement in productivity, but alongside of that, both the ability and willingness of the worker to put forth a higher standard of effort should be strengthened by better education and medical relief, improved standards of hygienic and sanitary conditions, better housing and water supply, higher rates of remuneration, etc.

## Chapter IX

# THE SIZE OF HOLDINGS

Holdings in Madras as elsewhere in India are in the large majority of cases small. The average size of the holding in the State for the ryotwari area was estimated in 1930 (Statistical Atlas for the Madras Presidency) to be 5·1 acres. This is slightly larger than the 4·9 cultivated acres per cultivator calculated for the State in the Census Report, 1921. The difference between the two figures is possibly accounted for by the uncultivated portions in individual holdings. By 1941 the average had got reduced to 3·7 acres.[1] The average figure, low as it is when compared with the average size in certain other countries or States of India, does not however give a true picture of the conditions existing in the different localities of the State. In 10 out of the 24 districts, the district average is lower than the State average, being lowest in S. Arcot, N. Arcot and Tanjore where the 3 acre figure is not reached. In all the ten districts the average is below 3·5 acres. Higher averages apply to the Nilgiris, where conditions are exceptional, as also to Bellary and Anantapur, Kurnool and Coimbatore, all dry areas. It is only to be expected that in dry cultivation holdings are bound to be larger in size than in the wet areas, for the obvious reason that more land is required in the former case for drawing an equal sustenance. (The average size of holdings in the ryotwari area for all the districts of the State is given in Appendix VI.)

By 1941 the average extent of land per patta had experienced a reduction of 2·72 acres in 40 years and of 1·4 acres in 11 years. The process of diminution appears to have got accelerated in recent years. That such diminution in the size of holdings has been the rule in most parts of the State is well brought out by the figures recorded in the resurvey of eight villages by the Department of Economics of the University of Madras in 1936. Table XVIII gives the recorded increase in small holdings.

The average size of the holding in all these villages, as observed by Prof. P. J. Thomas and Mr. K. C. Ramakrishnan in their Analysis and Observation, went down in the 20 years which intervened between the two surveys, the greatest fall taking place in Vadamalai-

1. Excluding S. Kanara for which figures are not available.

TABLE XVIII

| Village | 1 acre holdings | | Holdings between 1 and 5 acres | | Total number of holdings | |
|---|---|---|---|---|---|---|
| | 1916 | 1936 | 1916 | 1936 | 1916 | 1936 |
| Vadamalaipuram .. | 1 | 14 | 16 | 79 | 94 | 170 |
| Gangaikondan .. | — | — | 220 | 600 | — | — |
| Palakkurichi .. | | 72 | — | — | — | 215 |
| Erivellipet .. | — | — | — | — | 183 | 198 |
| Dusi .. | — | — | — | — | — | — |
| Vunagatla .. | — | 139 | — | 214 | — | — |
| Guruvayur .. | — | 383 | — | 131 | — | — |
| Watakancheri .. | — | — | — | — | — | — |

puram, i.e. from 22 acres to 9·7 acres. In Watakancheri, as they observe, new land brought into cultivation has been parcelled out among a number of petty holders. In the dry village of Vunagatla, the average holding in 1936 was only 3·25 acres.

It is idle to try and base any generalization regarding the State or any locality of it on the scanty data supplied by the resurvey of these 8 villages, yet it cannot be denied that what has happened in these villages is an indicator of what has generally been happening throughout the State. That small holdings abound all over the State is also clearly brought out by the investigation conducted by N. P. Narayanan Nair and K. Satyanarayana into 12 villages in the Madura, Coimbatore, East Godavari and Bellary districts under the auspices of the Madras Banking Enquiry Committee in 1930 or 1931. Table XIX gives the results of their enquiry as far as this matter is concerned.

In 4 of these villages the figures relating to the number of holdings of 1 acre and less are not available, but in those villages for which they are available it is seen that, with the exception of two, all the others had a third or more of their holdings, 1 acre and less. In seven of the villages surveyed, over 75% of the holdings were of the size of 5 acres and less.

The same conclusion is reached from an examination of the revenue demand on pattas. 77% of the holdings in the State pay Rs. 10 and less as land revenue, while in the districts of Chittoor, Trichinopoly, S. Arcot, Ramnad and Cuddapah the percentage is well over 80. The lowest percentages are seen in the districts of

TABLE XIX

| Village | Pattas 1 acres and less | Pattas between 1 and 5 acres | Percentage of (2) to total pattas | Percentage of (3) to total pattas |
|---|---|---|---|---|
| (1) | (2) | (3) | (4) | (5) |
| Chintampatti *alias* Tamaraipatti (Madura) | 110 | 239 | 36 | 79·4 |
| Kodukulam (Madura) | 145 | 309 | 39·2 | 83·5 |
| Peykulam (Madura) | 70 | 254 | 20·3 | 73·6 |
| Kambliampatti (Coimbatore) .. | 11 | 64 | 5·8 | 21·7 |
| Graynagar Settlement (Coimbatore) .. | — | 22 | — | — |
| Naganianaickenpalayam (Coimbatore) .. | 31 | 65 | 43 | 91 |
| Alamuru (E. Godavari) | 230 | 515 | 38 | 86 |
| Pedupalla (E. Godavari) | 116 | 241 | 43 | 89 |
| Pernikeru (E. Godavari) | 96 | 244 | 33 | 83 |
| Paramadevanapalli (Bellary) | — | 74 | — | 48 |
| Yalikoggal (Bellary) | — | 81 | — | 32·5 |
| Chaganur (Bellary) | — | 65 | — | 25·5 |

Vizagapatam, East Godavari, W. Godavari and Nellore. Even there the percentage does not fall below 57. (Further details are given in Appendix). Holdings paying Rs. 100 and more as revenue form only a small percentage of the total in the ryotwari areas of every district, and in six of them, viz. Nellore, Kistna, Vizagapatam, West Godavari, Tanjore and East Godavari they are below three per cent. The total number of pattas bearing assessment appears to have doubled in the 40 years intervening between 1900 and 1940.

From the revenue figures, only a rough approximation of the size of the holding can be gleaned, as the assessment rates in the different districts on wet and dry land and on different classes of soil are very divergent. Still there cannot be any doubt regarding the predominence in Madras agriculture of small holdings. If more detailed figures, showing the actual payments made by these holdings, were easily available, there would have been a clearer indication of the smallness of the holdings. However when the rough conclusion here is related to the findings of the detailed surveys conducted in the villages mentioned above, the conclusion is irresistible that a large percentage of holdings are below 1 acre in size and pay an insignificant amount as revenue. They are bound

to be uneconomic, whether in the wet or dry areas and in all classes of soil.

*An Economic Holding.* According to the investigators, N. P. Narayanan Nair and K. Satyanarayana, who surveyed the villages in the districts of Madura, Coimbatore, East Godavari and Bellary in 1930, the acreage required for an economic holding is 6 acres, 4 acres of dry land and 2 acres of garden land in Kambaliampatti village of Erode Taluk of the Coimbatore District, 4 acres of wet land in Penikeru village of Ramachandrapur Taluk of East Godavari District and 20 acres of dry land in Chaganur village of Bellary District. This wide disparity in the area of the economic holding, for a family of 5 in the different localities, is explained by the great variation in the fertility and other conditions of the land, and only goes to prove how dangerous and futile it is to make a generalization applicable to the whole State. As a rule, in dry land more acreage is needed to give a decent living than in wet areas and so the size of an economic holding has to be related to the type of land available and the crop grown.

Unfortunately no attempt was made in the Resurvey of some South Indian Villages to estimate the size of an economic holding in any of them, though from the fullness of the data collected and the facilities available to the investigators it would not have been very difficult to do so.. Therefore we have to fall back on estimates made for other States where the circumstances are similar, or on opinions expressed by people with long experience of agricultural conditions, to derive some idea of what constitutes an economic holding in this State. According to Keating 40 to 50 in the Deccan were needed to keep a man and his family in reasonable comfort, whereas Mann estimated for the same area that 20 acres were the irreducible minimum needed to give an average family the minimum standard of life considered necessary. H. S. Jevons, writing of the United Provinces, considered 20 to 30 acres as the size of an economic holding. The Baroda Committee thought that in their State it would vary between 30 and 50 bighas of fair land. These estimates were presumably related to the staple crop, namely paddy or wheat in dry cultivation; under intensive cultivation on wet land, with money or garden crops, the acreage will certainly be less, depending for its exact extent on a variety of other factors. According to the Floud Commission, Bengal, 2½ acres of the very best land in wet cultivation in the Tippera District will easily yield the minimum subsistence required for an average family under a system of double cropping, while 10 acres alone will constitute an economic holding in the less fertile lands of Western Bengal.

While there may be land in the delta regions of the State as fertile as in the Tippera District of Bengal, in other localities conditions approximate those prevalent in Western Bengal, the United Provinces or Bombay Deccan. Two and a half acres for an economic holding will therefore be the exception rather than the rule. The concensus of opinion among those who are acquainted with the condition of the agriculturists in this State, seems to be that in the wet areas 4 to 5 acres ordinarily will constitute an economic holding under existing standard of living, and in the dry areas, unless land is unusually infertile, 10 to 12 acres. Judged by this standard, the large majority of holdings or pattas hardly come upto this size and on an average a third of the holdings of a village do not even have 1/5 of the requisite size.

*Causes of Diminution*: The diminution in the average size of holdings in every district and in the State as a whole noticed above, has undoubtedly to be attributed to the large increase in the number of small holdings, especially of those ones which are tiny bits of land of 1 acre and less. This process has been steadily going on for years, in the opinion of competent observers, in spite of certain factors operating against it. According to the laws of inheritance, applicable to all sections of the community, a sub-division of landed property takes place, on the death of the owner, among his heirs, and this process progressively reduces the size of individual holdings. The exceptions to this rule are cases where the law of primogeniture, as among the Zamindars, or the joint family system prevails. The joint family system which was widespread all over India, especially in Madras, in the past centuries, has been gradually breaking up under the pressure of the increasing spirit of individualism, generated by the emphasis placed on individual rights by British law courts. Recourse is therefore had on every occasion to the invokation of the law of partition.

Increasing pressure of population on land, decline of subsidiary industries and the absence of other avenues of employment, the process of industrialization having been tardy, have been ancilliary factors operating in favour of division. Indebtedness on the part of the ryots and the insatiable land hunger of the professional classes have also caused alienation of land to moneylenders and urban classes, resulting in an increase in the number of holdings and a dimunition in their size. Alienation of land, if it is to agriculturists, especially of land which is contiguous to their own, will increase the size of the holding of the buyer, while it reduces the size of the holding of the seller. But when the tendency is to buy

every bit that offers, wherever it is, there will not be any compensating advantage in the division of the seller's holding, As has been mentioned earlier, the doubling of the number of pattas in the course of 40 years is a clear indication that the division which has been taking place has been without much compensating advantages. It also proves that the so-called restraining factors have not been so powerful as some have assumed. Thus the restrictions placed on sub-division by the revenue authorities, to which reference was made by N. Macmichael, Member of the Board of Revenue, Madras, in his evidence before the Royal Commission on Agriculture,[2] have not had the desired effect. As detailed by him, those restrictions are (1) when a portion of a field is relinquished, it should not be less than one acre in wet and 2 acres in dry, unless the relinquishment is made from causes beyond the ryot's control, (2) in transferring land from wet to dry, the area to be transferred should not be less than 25 cents, and (3) subdivision for transfer from double crop to single crop or for compounding wet land for double crop charge is not permitted if the acre is less than one acre. These restrictions hardly interfere with the operation of the laws of inheritance or the sale of land from debtors to moneylenders or others.

Nor do the facts substantiate the thesis made by the Madras Banking Enquiry Committee[3] that " the effect of fragmentation is mitigated by certain influences which bring land constantly into the market with the result that there are frequently opportunities for a ryot to buy the adjoining bits of land necessary to improve his holding". Even if the opportunity does offer, which is very doubtful, ability to take advantage of the offer does not always accompany the opportunity. The Royal Commission on Agriculture also expressed the view that the evil of sub-division and fragmentation did not exist in Madras to such an extent as in some of the other States of India because the joint family system has survived there to a greater extent. They were guided predominently, as pointed out by Mr. K. C. Ramakrishnan,[4] by the conditions obtaining in Malabar which were in no wise general in the State. Other opinions too, couched in similar terms, regarding the non-existence of acute conditions of fragmentation in this State, when legitimately stretched would deny the existence of sub-division too. Thus the Townsend Committee on Co-operation in 1929 and the

2. Evidence Vol. p. 263.

3. Report, p. 19.

4. Consolidation of Holdings in Madras, *Indian Co-operative Review*, October-December, 1939.

Board of Revenue in Madras in 1929 or 1930 denied the prevalence of fragmentation and so of sub-division in any remarkable degree. Sufficient data to refute or confirm these opinions regarding fragmentation are not available, but as regards sub-division, the facts quoted in the earlier portion of this chapter form a conclusive refutation.

That fragmentation also exists to some extent is brought out by the results obtained by the resurvey of 8 villages mentioned above. In the original survey conducted by the Department of Economics, Madras University, under the guidance of Gilbert Slater, there was a positive lack of data regarding fragmentation. In the resurvey too data have been gathered only for a few of the villages surveyed, viz. Vadamalaipuram, Palakkurichi and Dusi. In all these three villages fragmentation is seen to have increased in the course of 20 years. In Vadamalaipuram, the authors of the Resurvey observe, 170 ryots have 1027 plots scattered in different places in 5 revenue districts and on an average each holding has about 6 plots. In Palakkurichi a holding of 99·12 acres is distributed over 57 different places, a holding of 1·49 acres in three places, and another holding of 2·06 acres in 5 places.

These facts are undoubtedly too slender to base any generalization on them and may conceivably be the exception rather than the rule. All the previous authorities who have examined this question have come to the conclusion that fragmentation does not exist in this State in any acute form. Thus N. Macmichael in his evidence before the Royal Commission observed, "It may be doubted whether fragmentation has gone to such an extent in this State as to put the bulk of the land outside the possibility of effective cultivation or economical organization." In a similar strain the Royal Commission on Agriculture stated, "Fragmentation of holding is not extensive in Madras, but there is fragmentation of cultivation evidence of which is the existence of 1½ million tenants". The Townsend Committee on Co-operation and the Revenue Board of 1929 or 1930, as previously adverted to, were also of the same opinion. A little later, the Madras Banking Enquiry Committee also observed, "Extreme fragmentation is not seen to prevail to any great extent in this Presidency. .Holdings are undoubtedly fragmented and there is nothing uncommon about a ryot having half a dozen different plots, but it is not the rule, and though it is common for a ryot to have three plots, it is unusual to have many more.....In this Presidency no case has been brought to our notice where fragmentation has resulted in plots of land being uncultivable."

Whether we can accept these opinions as clinching the matter or should withhold judgment till more convincing proof either way is forthcoming is not easy to decide. Fragmentation is the natural accompaniment of sub-division, especially under the prevailing custom of dividing equally among the heirs all portions of the ancestor's property. In this it is very doubtful whether Madras is different from the other States of India. All the evidence goes to show that the rural folk of the State are as cantankerous and litiguous as rural folk elsewhere in India and as unmindful of their long-run interests as they. Nor is land any more uniform in quality in any part of the State than in those regions of India where fragmentation is known to exist in an acute form. The likelihood, therefore, is that with the growth of sub-division there has been also a growth of fragmentation. The probability in the matter is more acceptable than an opinion based on insufficient investigation.

Fragmentation, if not inordinate, has had certain advantages claimed for it in a country like India where cultivation is for the most part dependent on the monsoon. It is supposed to enable diversification of farming and provide an insurance against complete damage of crops by natural calamities. In some parts of the State owing to the extreme fluctuations in the volume, timeliness and distribution of rainfall, this kind of security is more welcome than the higher yield which compactness in the holding will give. But this advantage unless consciously realized and implemented in actual farming on a large and general scale will hardly outweigh the patent diseconomies of scattered strips. Both fixed and variable costs will rule higher, agricultural improvement will be prevented, land will be wasted in boundaries, irrigational difficulties will increase and the maintenance of correct levels rendered difficult, not to speak of the innumerable disputes and occasions for ill feeling between farmers which arise. S. B. Misra has calculated that expenses of cultivation increases by 5·3% for every 500 metres of distance on manual labour and ploughing, by 20 to 25% on the transport of manure and 15 to 32% on the transport of crops.[5]

*Remedial Measures*: If the evil exists therefore in a form which offers a menace to efficient farming, and the probability is that it does exist, measures have to be devised for eradicating it. The voluntary method of exchange through the formation of co-operative societies has been the only method tried in this State, and that too on too insignificant a scale to give any appreciable

5. Report on Fragmentation in United Provinces, 1924.

result. In 1939 there were only 15 consolidation societies registered, of which only about 6 were active. Two societies in North Arcot were outstanding and they had succeeded in consolidating about 500 acres of land.[6] This record does not stand comparison with the results achieved in the Punjab where in 1944 there were 1874 societies with a membership of 2·4 million and a consolidation record during the previous 5 years of 512,026 acres.[7] The slender measure of success which has attended the consolidation movement is undoubtedly due to the lack of effort in the direction, since all the official agencies, fitted to advance the movement, were settled in their opinion that no drastic action was called for. A new approach therefore to the problem of fragmentation and a new effort for its solution are immediately needed to ensure a satisfactory basic condition of agricultural re-organization.

In like manner sub-division of holding has to be assailed by legal measures meant to safeguard the impartibility of economic holdings, on the lines of Keatinge's proposal or the small Holdings Bill of Bombay, 1927. The objections raised by the Madras Board of Revenue to Keatinge's draft bill emphasize the difficulties in the way in the most unhelpful manner, without providing an alternative solution. Objectively considered, barring land nationalization or collectivization of agriculture, legal impartibility of economic holdings, in spite of its many drawbacks, is the only way of preventing the re-emergence of uneconomic holdings, once the existing uneconomic holdings are reconstituted into economic ones. This may be done without violating the law of inheritance, for as the Baroda Committee of 1917 recommended, through sale of land inherited to one of the heirs or to an outsider and an equal division of the proceeds of the sale among the heirs, perfect partition of the inherited estate may still be retained. If this is combined with a law of pre-emption, under which the first refusal in the event of sale to outsiders, is given to the neighbouring landholder, further creation of uneconomic holdings may be prevented. As the history of European countries where the evil of small holdings has existed, clearly shows, legislative indivisibility of the economic holding is the only safeguard against further fractionization. Co-operative farming among the small holders will be one method of obliterating the disadvantages of small holdings and gaining for them the economies of large-scale operations, and in the recon-

6. K. C. Ramakrishnan: Consolidation of Holdings in *Indian Co-operative Review*, October-December, 1939.

7. Oxford Pamphlets on Indian Affairs, No. 39. Co-operation by W. R. S. Sathianathan and J. C. Ryan, p. 27.

struction of existing uneconomic farms into economic ones, such societies will assuredly play a large role ; but in the first place co-operative farming is difficult to organize and work, and secondly, will involve, if solely relied upon, the acceptance of a situation *pregnant with the possibility of progressive deterioration.*

But administratively a more difficult problem and one which will invoke dogged resistance is the reconstitution of existing uneconomic holdings. Compulsory dispossession of existing owners for the purpose of consolidation into larger units will be a stupendous task, not easily acquiesced in by the people concerned. In some of the European countries where this evil existed, this was the method followed, but in India with other avocations denied and a sentimental attachment to ancestral land existing in an intense degree, the opposition will be great. But unless, through consolidation of the above sort or co-operative farming, such reconstitution takes place, the bulk of the holdings will continue to be uneconomic, with consequent perpetuation of degraded agriculture.

## CHAPTER X

# LAND TENURES

Land tenures in Madras, as elsewhere in India, are inextricably bound up with the Land Revenue Settlements and derive their nature from the nature of the settlements. Apart from the settlements and the landed rights they recognise or confer, no rights can be indisputably established as inhering in the user of land. The great antiquity of land revenue in this country, as in all others, makes it impossible to say with any certainty whether the State demand is based on its sovereign character or on proprietorship, or whether it always co-existed with the rights of the holders of land. Presumably private rights in land can receive legal or general recognition only with the emergence of sovereign power, and if concurrently with such emergence the right of the State to a share in the produce of land also emerged, the system of private rights and the system of land revenue or tax will both have a cognate and concurrent origin. Land tenures cannot then be held to have had an anterior existence to the revenue settlement or an independent character of their own.

When and how land rights originated in India or of what absolute quality they were is shrouded in mystery, and such mystery surrounds also the beginnings of land revenue. Indian historians speak of allusions to its existence in the Epics, the law books, in the Arthasastra, in poems and dramatic works,[1] but those allusions do not obviously establish beyond doubt the nature of the right which the holders of land had or the restrictions on that right imposed by the right of the sovereign to a share in the produce of land. The Institutes of Manu make a categorical statement that land belonged to him who cut away the wood or who first cleared and tilled it, and the king's right only amounted to a share of the produce of land and not to the land itself. Whether this statement clinches the matter or still leaves it in doubt is an open question, and without more historical evidence it would be unscientific to hazard a conclusion.

But whatever might have been the position of the holder of land in ancient times, his present position is the result of a long

1. V. R. R. Dikshitar: Hindu Administrative Institutions, p. 163.

evolution, in the making of which the successive land revenue settlements effected by Hindu, Muslim and British rulers have had the major influence. It would not therefore be wrong to say that the land rights enjoyed by the different categories of holders are those recognized as such in the settlements.

The main tenures thus existing in the State are the zamindari tenure, the janmi tenure of Malabar, and the inam tenure. The muli tenure of South Kanara is a slight variation of the ryotwari tenure, and so does not require special treatment.

*The Zamindari Tenure*: The zamindari tenure got crystallized in this State in 1802 when the Permanent Settlement was effected. Whatever their position prior to it was, this settlement conferred on the zamindars in perpetuity the estates from which they collected land revenue or rent, either as proprietors or as farmers of revenue. In addition to the existing zamindars, a new class of zamindars having the same status and rights as the older ones, was created by dividing the Crown lands (havelly or koru) into estates and selling them to highest bidders. This was freely done in the Northern Circars where the zamindari system actually existed prior to the Settlement. But in the southern portions of the State where the zamindars did not exist, a settlement of land revenue with the accompanying rights and status of zamindars was effected in some localities with Poligar chieftains who had claims to these estates.

Under this settlement the zamindars had to pay to the Government treasury a fixed sum of money as land revenue, known as *Peshkush*, for the estate they held, and the Government in its turn irrevocably and perpetually waived their right to enhance the revenue demand. At the Settlement the peshkush, in some cases, was fixed at a percentage of actual revenue collected or the assets, usually 66·6%, and in others at the discretion of the Board of Revenue or on certain other considerations. The amount of the assessment and the conditions and articles of the tenure were entered in the *Sanad-i-milkiyat-i-istimvar* granted to the zamindar and in the *Kabuliat* executed by him.[2] The zamindar had the right to ask for a reduction, if any of the items included in the assets were stopped by order of Government. Such reductions have been granted to some zamindars in the Masulipatam area.

2. S. Sundararaja Iyengar: Land Tenures in the Madras Presidency, pp. 125 and 126.

The object of the permanent settlement was primarily to give stability to the revenue receipts of the Government, which had been widely fluctuating prior to it, and to give some one a permanent interest in the land which would serve as a sufficient incentive to effect the maximum development of the estate. In addition, as the Madras Estate Land Act Committee, 1938, have stated, there was also the aim of protecting the rights and interests of cultivators from the tyranny and oppression of those entrusted with the duty of collecting revenue.[3] This latter was sought to be achieved through providing that the zamindars should grant pattas to the cultivators under the Patta Regulation, passed simultaneously in 1802 with the Permanent Settlement Regulation.

The settlement undoubtedly vested in the zamindar a permanent interest in the estate, but whether it amounted to the proprietory right or not, has been, for long, a subject of dispute. Admittedly his is an hereditary, alienable right, almost amounting to the proprietory right, but it is not clear whether it is an absolute right or one restricted by the right of the cultivator. In the waste lands of the zamindari, according to some, he has right to both warams,[4] but, according to others, his right is subject to the prescriptive right of the cultivators to extend cultivation to the waste on the same terms as on the occupied land in his possession.[5] But over occupied lands his right is subject to the customary right of the ryot. Thus speaking about Bengal, the Land Revenue Commission of Bengal, 1940, observe :—"The zamindars in Bengal never had an absolute right of property in the soil ; nor was it intended to give them such rights by the Permanent Settlement. Their rights have always been limited by the rights of the raiyats. In the Great Rent Case, Mr. Justice Trevor described the position by saying—'The zamindar enjoys his estate subject to, and limited by, these rights and interests of the raiyats, and the notion of an absolute estate is as alien from the Regulations as it is from the old Hindu and Muhammadan Law'".[6]

The Madras Estate Land Act Committee, 1938, in more emphatic terms repudiate the claim of the zamindar to absolute proprietorship. "On a review of all the authorities quoted above and the oral and documentary evidence recorded and the case law quoted in Chapter X, we are of opinion that the landholder is only an

3. Report, Part I, p. 18.
4. S. Sundararaja Iyengar: *Op. cit.*, p. 131.
5. Report of the Estate Land Act Committee, p. 91.
6. Report, Vol. I, p. 17.

agent of the Government to collect rents for them as laid down in section 4 of the Estates Land Act. He is not entitled even to the possession of ryoti land, as laid down by the Privy Council in I.L.R. 45 Madras, 586 ".[7] These findings are based on the view that the sovereign in India neither during Hindu times nor during Muhammadan times was proprietor of the soil, but could only as sovereign levy a share of the produce of land in return for the security and protection he afforded ; and since he was not proprietor, the British Government did not succeed to any such right and so could not grant to the zamindar any right which it did not possess under the Permanent Settlement.

In Section 2 of Regulation XXV of 1802 the words 'Proprietory Right' is used, but as S. Sundararaja Iyengar has stated,[8] the words are used in the technical sense referring to the person who pays revenue directly to the Government. " As the right of the ryot to the soil is derived independently of Government, the grant of proprietory right in the soil by it conveys only such rights as it has in the lands which are the subject matter of the grant, and it cannot grant more without infringing the rights of others ". This view was categorically expressed in 41 Madras 749 and affirmed by the Privy Council in 40 M.L.J. 537.[9]

The exact title of the zamindar to his estate, as a result of the Permanent Settlement and the tenancy laws passed since, is clearly and unequivocally stated by Baden Powell in the following words :— " The actual right of the landlord, as it now exists, is an estate in the soil certainly less than a 'fee-simple' of English law, but freely heritable and alienable and available for mortgage, sale, gift or bequest. It is however limited by the rights of tenure-holders and raiyats (i.e. tenants), when they possess such under the Tenancy Law, or other special law applicable to the case. And, of course, it is limited (like all other rights in revenue-paying lands) by the Government right to its revenue and the right of sale in case of default to make good, at due date, the full amount of that revenue ". But over his private lands, the unoccupied waste and over free grants of land the zamindar has absolute property. So also he owns all the 'sayer' items such as fisheries, produce from forests and from grazing, and sale of jungle products, subject to the right of ryots over tanks and tank beds for grazing, cutting fuel and fishing which custom has given them.[10]

7. Report, Part I, p. 21.
8. *Op. cit.*, pp. 124 and 125.
9. *Ibid*, p. 124 footnote.
10. S. Sundararaja Iyengar: *Op. cit.*, p. 132.

He has rights over the minerals in his estate in the absence of evidence that he had parted with them.[11] Even these latter rights are denied to the zamindar by the Madras Estate Land Acts Committee.

If these are the rights of the zamindars, the ryots holding land under them have also rights, heritable and transferable by sale, gift or otherwise and a permanent right of occupancy. These rights first sought to be clarified and regularized by the Patta Regulations of 1802, were later on put on a more stable foundation by the Rent Act of 1865 and the Madras Estate Land Act of 1908. Under these enactments a ryot who is in possession of 'ryoti" land, as distinct from the private lands of the zamindar, has the permanent heritable and transferable right of occupancy over such land. This right will vest in all those who occupy waste lands in the estate and convert them into ryoti land by the payment of a premium to the zamindar. The right gives the ryot freedom to use the land in any manner he likes, provided he does not render it unfit for cultivation, and to effect improvements on it, and safeguards him from eviction except under the provisions of legislation. The ryot has the right to get recorded all improvements effected by him and prevent the zamindar from enhancing the rent on account of them. Improvements effected by the landlord too have to be registered, before he becomes entitled to raise the rent on their account. The ryot has the right to demand the issue of a patta to him and is obliged to give a muchilika in return. The patta is the documentary evidence of his occupancy right. The rent payable to the zamindar is the first charge on the land and its produce, and arrears of rent can be collected by a suit before the Collector and through distraint and sale of the property of the defaulter, including his holdnig.

While there are the rights vesting in the ryot according to the enactments, the views of the Estates Land Act Committee, 1938, go beyond this and consider the ryot to be the owner of the soil "We hold that the cultivator of the permanently settled estates is entitled to the same rights which a ryotwari cultivator holds under the Government. In other words, he is the owner of the soil subject to the payment of land revenue due to the Government. He has not derived his title from the landholder. The amount he pays to the landholder is not rent that is paid by a tenant to a landlord, but it is only the dues to the Government as assessment on land."[12] A further deduction from this conclusion made by the

11. Privy Council decision in Durga Prasad Sing *v.* Braja Nath Bose, S. Sundararaja Iyengar, *op. cit.*, p. 138.

12. Report, Part I, p. 25.

Committee is that the Permanent Settlement fixed not only the peshkush payable by the zamindar to the Government but also the rent payable to the ryots to the zamindar, and that all enhancements made by the zamindars since the Settlement were illegal. Thus they state, "the patta granted to the cultivator by the landholder is a title-deed, like the sanad granted to the landholder by the Government. Just as the peshkush mentioned in the sanad is fixed permanently, so also the rate of rent defined in the patta is fixed for ever unalterably." [13] In much the same strain, though not in the same dogmatic manner, the Land Revenue Commission of Bengal, 1940, also state that the raiyats in Bengal have a large measure of proprietory right, and that the proprietory rights vested in the superior landlords do not for practical purposes detract from the value of their proprietory rights over their holdings. "This is clear from the fact that if all the superior interests in land above that of the occupancy raiyat were acquired, and compensation paid for them, the occupancy raiyat would not, in the opinion of all our witnesses, be prepared to pay any part of the compensation towards the acquisition of full proprietory rights. There are no elements of proprietorship for which it would be worth their while to pay anything." [14]

The protection given to the ryot by tenancy legislation and these findings make it abundantly clear that the ryot, as long as he pays his rent or revenue and carries on good cultivation, has nothing to fear from the existence of certain superior rights in land, and can for all practical purposes consider the holding to be his own to be bequeathed or transferred according to his will.

While under the relevant regulations and enactments these two rights in land, viz., the proprietory right of the zamindar, whatever it is, and the occupancy right of the ryot, both heritable and transferable, are clearly recognized, rights subordinate to these also exist, partly created by the widespread practice of sub-infeudation, partly as the result of ignoring the just claims of some of the ryots at the Settlement, and partly by leasing out lands to tenants. The evil of sub-infeudation has not developed to such an extent in this State as it has in Bengal, where the Simon Commission found that in some cases nearly 50 different intermediary interests had been formed between the zamindar and the actual cultivator of the soil.[15] In the Bakerganj district of Bengal, as the

13. Report, Part I, p. 30.
14. Report, Vol. I, pp. 17 and 18.
15. Quoted in the Report of the Land Revenue Commission, Bengal, 1938-40, Vol. I, p. 37.

Floud Commission observe,[16] there are as many as 15 and 20 grades of tenure holders holding superior interests in land under the zamindar and above the occupancy ryot. Under-farmers and tenure-holders as such, originating in the sub-farming of the right of rent or revenue collection by the zamindar, do not exist in this State, all vestiges of them having been removed by granting them pattas and giving them the status of occupancy ryots. In this process some of the actual cultivators between whom and the zamindar these intermediaries existed, failed to receive recognition as occupancy ryots, though they had established customary rights in land. In addition the practice of occupancy ryots sub-letting their lands to sub-tenants, Ulkudies and Porakudies or Payacaries, also gave rise to a class of tenants who were denied occupancy rights. These two classes and the tenants under them form the sub-tenants in zamindari tracts, and though custom gives them a heritable right of cultivating the lands in their possession, that right is not transferable and has not received recognition in the Regulations of 1802 or subsequent tenancy legislation, as in certain other States of India, such as Bengal, the United Provinces and the Central Provinces, where under-tenants have been given occupancy rights.

The existence of these under-tenants who actually cultivate the soil has virtually converted innumerable occupancy ryots into mere rent receivers, living on the margin of what they receive over what they have to pay to the zamindar. Among the undertenants too there are a few categories who are mere rent receivers.

Distinct from the occupancy ryots are the non-occupancy ryots. The Act of 1908 has not given a definition of these ryots, but those who are ordinarily deemed such are " (1) ryots admitted to the occupation of old waste on such terms as may be agreed upon between them and the landholder; (2) ryots admitted to waste lands under a contract for the pasturage of cattle, and to land reserved *bona fide* by the landholder for forest under a contract for the temporary cultivation thereof; (3) ryots admitted to the possession of land reclaimed by the landholder by his own servants or hired labour, for thirty years from such reclamation; and (4) ryots admitted to the possession of lands which had come into the possession of the landholders, either by transfer for valuable consideration before the passing of the Act otherwise than at a sale for arrears of rent, or by inheritance, for twelve years from the passing of the Act."[17]

16. Report, Vol. I, p. 33.
17. S. Sundararaja Iyengar: *Op. cit.*, p. 331.

A non-occupancy ryot is entitled to effect certain permissible improvements on land, such as, reclaiming, clearing, enclosing, levelling land, etc., and constructing or repairing wells, and to demand the grant of occupancy right to him on payment of a sum equal to two and a half times the annual rent, together with the cost of preparing documents for the purpose. If the landlord on such demand fails to grant the occupancy right, he has the right to appeal to the Collector and obtain such rights.

He can be ejected only on the following grounds, viz., (1) for using land in a manner which will make it unfit for cultivation, (2) for a decree for arrears of rent, (3) for refusal to pay a fair and equitable rent, (4) for mining or quarring on the land without the permission of the landlord, and (5) for the expiry of the term of a lease exceeding five years.[18]

These rights vest in ryots of *old waste* too who are all considered non-occupancy ryots. Their rents cannot be enhanced except under the following circumstances:—the rents are not fixed in agreements in writing or when the tenancy is for one year at a time or when the land is held after the expiry of the year.[19]

Apart from these non-occupancy ryots, there are also other tenants who have had a different origin and have very different rights. Most of them came into existence as the result of the sub-infeudation of land. Such tenants, mostly as tenants-at-will, exist also on the 'Sir' or private lands of the zamindars.

The zamindari tenure and settlement prevail over an area of 13·1 million acres, out of a total area of the State of 84·7 million acres.[20] This works out to 15·5% of total area. (Corrected to exclude Ganjam). The zamindaries exist in all districts except the Ceded Districts, Malabar, S. Kanara and the Nilgiris. But they occupy large areas only in 11 districts, viz., the Northern Circars Vizagapatam, Nellore, Chittoor, Salem, Ramnad, Madura, Tinnevelly and Chingleput. The largest zamindari area is in Vizagapatam, amounting to nearly 9 million acres, and other districts where they exceed a million acres are Nellore, Kistna, Chittoor and Ramnad. The total peshkush paid by zamindars to the Government amounts to about Rs. 47 lakhs, and compared with the land revenue received in the ryotwari area (Rs. 890 lakhs) and the acreage involved, the burden of assessment works out to only

18. S. Sundararaja Iyengar: *Op. cit.*, p. 332.
19. *Ibid*, p. 335.
20. Estate Lands Act Committee Report, Part II, p. 205.

26 percentage of the burden in the ryotwari tracts, an average rate of as. 5 ps. 9 per acre as against Re. 1-5-4 in the ryotwari areas.

*Ryotwari Tenure*: This tenure prevails over the bulk of the State and has not been so much the result of land revenue settlement as the zamindari tenure. The ryotwari settlement is distinguished by the fact that it is a settlement effected directly with the ryot, the actual cultivator of the soil, and in this there is the tacit recognition that the ryot is the indisputable proprietor of the soil. His proprietorship, whatever the term means in India, is not a right that the settlement has conferred, but one which it has merely recognized. The assessment the holder has to pay is set forth in the patta granted to him and renewed every year, and while it serves as the document of settlement, it is also evidence of possession, though not of title. As long as he pays the assessment, his proprietory right over the land held by him is unquestioned. It confers the right of inheritance, of mortgage and of transfer by sale, gift or bequest. But on inheritance or transfer, the new holder, registered as such in Government records, has to pay the assessment. The holder has the option to relinquish the land and thus escape payment of the assessment. This last right may seem to suggest that the proprietory right is vested in the State and the holder of land is just an occupant, but as Jathar and Beri have pointed out, this is too slender a basis for a theory of state proprietorship in India.[21]

Under the ryot or the pattadar there may be tenants actually engaged in cultivating the soil, with or without the aid of hired labourers, but such tenants are simply tenants-at-will having no saleable or transferable right in the soil. According to the usual practice the son or sons may claim the right to cultivate the land the father cultivated, but this right has not received any legal recognition. Nor is it enforceable in a court of law. In many cases, the pattadar has now become a non-cultivating proprietor, called Mirasdar in Tamil areas, and is virtually an intermediary in much the same way as the Zamindar is, between the State and the actual cultivator.

The settlement effected with the ryot is temporary, effective for a period of thirty years at a time, at the expiry of which there is a resettlement for a similar period. The original settlement was effected after a survey and a classification of land according to fertility. Land was classified into five series, the alluvial and

21. Jathar and Beri: Indian Economics, Vol. I, p. 444.

exceptional, the black cotton soil, the red ferruginous soil, the calcareous soil and the arenaceous soil. Each series is further subdivided into classes, such as, clay, loam and sand, and again into sorts, such as, best, good, ordinary, inferior and worst. The net produce on each sort of soil is made the basis of assessment, and at the original settlement the revenue demand was fixed at 50% of net produce. The net produce is arrived at by deducting from the grain outturn on each sort of soil, the expenses of cultivation. The grain outturn for the standard grain is calculated on the basis of actual experiments and the knowledge of revenue and village officers. This outturn is computed into money value at a commutation rate, which is the average of the prices of the standard grain for the twenty non-famine years preceding the settlement. From this money value, 15% is deducted for marketing charges and another 1/16 to ¼ for vicissitudes of the season. From the resultant figures costs of cultivation are deducted. The residue is considered to be the net produce. The revenue demand is then expressed as so many rupees or annas per acre. Different sorts of land having the same rates are grouped together in 'tarams' or grades, and these tarams are arranged in such a way as to result in a uniform system of gradation. There are three scales of tarams in actual force at present, one for wet lands, one for dry lands, and a third for the garden lands of Malabar and South Kanara. In these scales the rates vary from annas 2 to Rs. 15 per acre. In the wet lands there are 80 rates, ranging from annas 12 to Rs. 15, in the dry lands, 61 rates, ranging from annas 2 to Rs. 11, and in garden land, 7 rates, from Re. 1 to Rs. 7 per acre.[22] In the irrigated tracts the rate is a consolidated rate which includes also the water charges.

The rates fixed at the settlement are operative on the different classes of land, and the annual revenue demand is based on those rates. But in order to determine what each individual registered holder has to pay every year on his holding or holdings, an annual jamabandi is held. This amounts to a revision of the patta each year. At the jamabandi account is taken of the fields actually held by each holder; the question whether any remission should be allowed on the total assessment is examined; and accounts are settled up and entered in the patta for the year.

At the time of resettlement which comes once in 30 years, the question whether an enhancement or decrease of the taram rates is necessitated or not, is examined in relation to price changes, im-

22. S. Y. Krishnaswami: Rural Problems in Madras, p. 56.

provement in the means of communication, in irrigational facilities and in marketing. By a recent order of the Government the permissible enhancement on account of a rise of prices is limited to 18¾%. The phenomenon since the first settlement has been one of rising prices, and so the question of what decreases should be allowed at resettlement for a price fall has not so far arisen. But during the depression the inordinate fall in agricultural prices raised the burden of land revenue and brought to the fore the whole question of fixed rates based on accepted commutation rates for such a long period as thirty years.

This anomaly together with the absence of any statutory sanction for the assessment rates and the inelasticity of the yield from the revenue point of view has drawn attention to the urgent need for reform. The commutation rates adopted in the different districts at settlement or resettlement have varied widely and exist today in a varying relation to current prices, making the incidence of land revenue to fall with unequal weight on different localities. The complication introduced by the consolidated rate in wet areas too has had the identical effect of unequal incidence. Another criticism usually levelled against the existing system of assessment is that it is regressive in its incidence, since the same rate per acre is applied to large and small holders alike, without taking into account the ability of the assessee to pay.

These defects are sought to be remedied by certain measures of reform. In the Punjab where the same problems obtain, attempts were being made before the Partition to exempt the small holders from the levy and to relate the annual demand on the rest to current prices on the basis of a sliding scale. In Madras the first Congress Ministry ordered the suspension of resettlement operations and considered the question of amending the system by grouping the tracts and reducing the rates in some of the groups. But before any final decision could be taken in the matter, the Ministry had to resign. The present Congress Ministry is also engaged in considering the question of reform, and from the public utterances made by the Revenue Minister, it would appear that the proposals are to reduce the basic rates of assessment on all tarams without granting exemption to any holders, and to introduce a system of gradation so as to raise the incidence on the more well-to-do ryots. This latter may be done by higher rates of assessment or surcharges or by an agricultural income-tax. This piece of reform is to be accompanied by the compilation of a revenue code which would go some way to meet the demand for statutory regulation of land revenue.

These proposals, sound as they are, do not go far enough, for by themselves they would not remove the inequality of incidence as between localities, caused by the adoption of different commutation rates, or differentiate between rich and poor crops such as commercial crops and foodgrains, or again effect a relation between the revenue demand and prevalent prices. Furthermore, if the levy is to be truly made a levy on the economic rent of land, the calculation of net produce should be made more accurate, by making full allowance in cost of cultivation, for the farmer's labour, management and risk-bearing. The refusal to grant exemption to the small holder may appear to retain the supposed regressive nature of the levy and go directly against the popular demand for exemption, but will on reflection be seen to be well-founded in the theory of economic rent and justified, from the individual point of view, by strict investment principles and amortization processes.

However to resolve this question and all others detailed above, a Land Revenue Commission is urgently needed, and it is most gratifying to know that such a Commission is being contemplated by the Revenue Minister.[22a]

*Land Tenures in Malabar* : Malabar presents a complicated system of land tenures, with the Janmi at the top holding the proprietory right and a great variety of lease holders under him. The settlement of revenue is effected with the Janmi who is considered to be the proprietor, but unlike the Zamindari settlement, it is temporary, having currency, as in the ryotwari areas, for thirty years. In effecting the settlement, ryotwari principles are followed, but since much of the land area is garden land, the garden rates of assessment apply.

The origin of the janmi is shrouded in mystery. Though a number of explanations are given, the most satisfactory explanation seems to be the one given by Baden Powell that they were the old chieftains of the land who degenerated into revenue contractors after the conquest of the district by the Mysore ruler.[23] The British power which came after Tippu, finding these laying claim to the land from which they collected revenue, recognized them as proprietors, owning not only the occupied land, but even forests and unoccupied waste. " As a matter of fact, the idea of the 'Janmi' having a special right in the soil was merely the last assumption of

22-a. Since writing the above the Government of Madras have appointed a Land Revenue Reforms Committee to make recommendations in this behalf.
23. Land Systems of British India, Vol. III, Part I, Ch. IV, p. 163.

a military class, who no longer had independent rule ".[24] The Malabar Tenancy Committee of 1940 also were of the view that the Janmi's origin must be sought in the overlordship exercised by the rajahs or local chiefs and not in original occupation by them.[25]

If this be the origin of the Janmi, there can hardly be any distinction between him and the Zamindar of the Telugu or Tamil areas, and yet the non-inclusion of the Malabar Janmi in the Zamindari Abolition Act is evidence of the fact that the Government consider the Janmi's position to be something different from the Zamindar's. The system of farming revenue was not perhaps so conspicuous in Malabar, either before or after the advent of the British, as in the Northern Circars, and so it has not been easy to dispose of the right of the Janmi as equivalent to that of a farmer of revenue. His proprietory right was evidently not one conferred by the settlement, as in the case of the Permanent Settlement, but one recognized as such at the settlement. In this respect he is akin to the ryots of the ryotwari tracts, yet still differs from him, in that his domain over forest and unoccupied waste indicates a right far superior to that of the ryot and more fully approximating the freehold right of Britain than any other landed right in the State.

But the real complexities of land tenures are introduced by the tenancy rights held under the Janmi. A great variety of these exist, but the three most prominent of them are the Kanom right, the Kuzhikanom right and the Verumpattam right. The Kanom right combines a mortgagee's and a leaseholder's rights, and it is difficult to decide whether it is the result of a mortgage or a lease. This point has been ably stated by Innes, J. in the Full Bench decision of the Madras High Court in Nellaya Variyath Silpani *v.* Ashtamurthi Nambudri. " In some cases it may be a mere lease, a sum being advanced as security for the rent or for proper cultivation, to be repaid on the expiry of the term. In other cases, and most frequently, it is created as a lease by way of mortgage to secure a loan advanced to the janmi. Rent is payable in the case of every *kanom,* but all *kanoms* partake also to a certain extent of the incidents of a usufructuary mortgage. The mortgagee in all such holdings is assumed to be able to derive from the lands placed in his possession, enough to pay the interest, at least of the money advanced. The discharge of the principal is not immediately contemplated. The holder of the *kanom,* therefore, pays himself the interest and also pays the Government tax, either directly or through the landlord. The overplus or a certain fixed amount in

24. Baden Powell: Land Systems of British India, Vol. III, p. 166.
25. Report of the Malabar Tenancy Committee, 1940, Vol. I, p. 12.

grain or money is paid to the landlord. If, when viewed scientifically, it cannot be wholly regarded as a mortgage, it certainly cannot be wholly regarded as a lease, as undoubtedly the land enures as security, if not for the principal, at least for the interest of the loan advanced."[26] In a kanom lease, as S. Y. Krishnaswami has stated, the lease is the substantial thing, the security being a minor matter as in South Malabar, while in a kanom mortgage in North Malabar the amount advanced is substantial, and the rent a trifling payment.[27]

The Kanom now is generally a lease for 12 years during which the kanomdar has to pay a 'michavaram' or rent to the janmi. During this period the kanomdar is in full possession and enjoyment of the land and its produce, and on the expiry of the term, under the Malabar Tenancy Act of 1930, can claim a renewal on the payment of a fee fixed by the Act, which the landlord is obliged to grant. Every such renewal is for periods of 12 years. But a kanomdar once in possession of the land has the right to perpetual possession on his readiness to pay the renewal fees and the annual rent. This new provision in the Act of 1930 has eradicated the insecurity of tenure which characterized the pre-1930 period and stopped the oppressive practice by landlords of charging high renewal fees or premiums or granting a melcharth to another even during the currency of the old lease. This enactment, though it has not restored the kanomdar to his original position of owner and occupier (the view of the Malabar Tenancy Committee, 1940), has nevertheless given him fixity of rent and of tenure and removed from his horizon the nightmare of eviction. For non-payment of rent however the janmi has the right to eject the kanomdar, and the kanomdar has the right to relinquish the land on the expiry of the lease and claim payment for all improvements effected by him.

A variation of the Kanom tenure is the Kuzhikanom tenure. This is a mortgage of the waste land, the lessee being obliged, under the terms of the mortgage and lease, to develop the land by reclaiming the land and planting it with trees. If the tenant fails to develop the land, the janmi has the right to dispossess him even before the expiry of the 12 specified years. This lease or mortgage also is renewable at the end of the period on the payment of a fee.

26. S. Sundararaja Iyengar: Land Tenures in the Madras Presidency, p. 397.

27. Rural Problems in Madras, p. 62.

The Verumpattam is a tenancy-at-will from year to year, but the Malabar Tenancy Act of 1930 has conferred fixity of tenure on cultivating verumpattamdars, the obligation being laid on them to pay the fixed rent and a year's rent in advance or adequate security for it.

The other tenures in existence in Malabar, such as saswatam, anubhavam, adima, kudima, otti, kuttikanom, kanompattam melpattom, etc. are variations of these three, ranging from perpetual to annual leases.

Though the Act of 1930 has safeguarded for the tenants fixity of tenure and fair rents, many loopholes and defects have been noticed in the enforcement of the Act. To remedy these and to stop the endless litigation that proceeded therefrom, the Government decided to introduce comprehensive legislation governing these tenures. With that intention the Malabar Tenancy Committee was appointed in 1940. But the aggravation of war conditions compelled a postponement of the report of this Committee. The present Congress Ministry has now taken up the matter and has introduced a new Malabar tenancy bill into the legislature. The main purport of the bill is to extend the privilege of fixity of tenure to cultivating and customary *verumpattamdars* and to new categories of *kanomdars* and *kuzhikanomdars* and to lay down the principles for fixing rents in different types of leases. A Rent Settlement Authority is sought to be constituted for determining rents in individual cases.

*The Inam Tenure* : Inam tenures are beneficial tenures which have had their origin in the assignments of land, revenue free or at low quit rent, to civil officers of Government as rewards for public service, to holy or learned men for their maintenance, to temples and charitable institutions for their support and to troops and military officers as payment for anticipated services. It was usual to make such grants during the time of Hindu rule in India, and the practice was continued by the Muhammadan rulers too after their advent. The original Sanskrit name for such grants, *Manyam*, was replaced by the Arabic term, *Inam*, with the coming of the Muslims.

As stated by S. Sundararaja Iyengar,[28] such grants were made in South India according to the directions contained in the Sanskrit law books, and the clauses pertaining to the grant were engraved on copper plates or stone slabs. Those clauses usually

28. Land Tenures in the Madras Presidency, p. 191.

stated the donor's genealogy, the description of the nature of the grant, the people and persons on whom it was conferred, the objects for which it was made, its conditions and dates and imprecations on violators of the grant, all attested by witnesses. This practice received an extended application at the hands of Muslim rulers who regularly rewarded the higher ranks of their military and civil officers by assigning large tracts of land, known as 'Jaghirs'.

Even the British followed the practice for sometime, grants of land taking the place of pensions, but after 1829 the practice was discontinued under instructions from the Court of Directors, except in special cases. But the British had perforce to recognize the earlier grants which they and their predecessors in the sovereignty of India had already made and exempt such lands from the revenue settlement.

Inam grants made during earlier times took many forms, sometimes being only the grant of revenue (*melwaram*) due to the sovereign, the occupants of such land retaining the occupancy or *kudiwaram* rights in them (e.g. *shrotriyam*); at other times including both the melwaram and kudiwaram rights on land (e.g. *sarvamanyam*); and still other times subject to the payment of a jodi or quit rent (e.g. *Bilmakla jodi, Hungami jodi, kattukuttagai,* etc.). The grants were in some cases made to the grantees and their descendants in perpetuity, in other cases for a few generations and in still others, only for their life time. The grants of waste land by the sovereign or officers authorized by him usually carried with them grants of both melwaram and kudiwaram rights, but if the grant was of land already in occupation, unless it was made to the occupier himself or the sovereign bought the right of the occupier in order to make the grant, it conveyed to the grantee only the assignment of revenue due to the sovereign. In the earliest times the sovereign or officers authorized by him only could make the grant, but during the period of political confusion which prevailed in the latter half of the 18th century, this power was usurped by many petty chieftains, zamindars, poligars, etc.

Beneficial grants have been of whole villages or a number of villages or only certain lands in them.[29] The grant of a whole village is called a *Iehaut* or major inam and grants of some lands in a village are called minor inams. Among minor inams a distinctive name is applied to a large grant, *khandriga* or *pohal shrotriyam*.

29. S. Sundararaja Iyengar: *Op. cit.*, p. 203.

At the time of the Permanent Settlement some of the inams which existed in the estates for which revenue was settled were excluded from the calculation of peshkush and others were included in the assets. The Zamindars have no rights over the 'Excluded Inams'. Section 12 of Regulation XXV of 1802 distinctly withheld the right of resuming inam lands known as lakhiraj lands from the Zamindars. But over the 'Included Inams' the Zamindars have the right of collecting the jodi, but no right of resumption, such right vesting with the government. However in the case of those inams whose full rental has been included in the assets of the estate in the calculation of peshkush, the Zamindar holds the right of resumption. The Excluded Inams are governed by a special set of laws promulgated in 1802, but over the Included Inams and Post-Settlement Inams, the Inam Act of 1862, the Estate Land Act of 1908 and the Amending Act of 1936 apply. Post-Settlement inams are grants made by landholders after the permanent settlement. But all such inams have been declared invalid under Sections 4 and 12 of the Permanent Settlement Regulation, and if valid at all will not endure beyond the life time of the grantee.[30] Those inams are liable to be proceeded against for default of payment of peshkush by the Zamindar.[31]

In 1858 under orders of the Home Government an elaborate enquiry into the tenures of rent-free lands was conducted by the Inam Commission appointed by the Government of Madras. As a result of the enquiry all such inams were entered in the Inam Register and classified and the titles to such land held by the Inamdars clarified. Inams were put into 9 classes as follows[32]:—

1. Inams held for the support of religious institutions and for services connected with them.
2. Those held for the purpose of public utility.
3. Those held for the support of irrigational works yielding public revenue.
4. Those held by Brahmins and other religious classes for their personal benefit.
5. Those held by the families of poligars and those who filled hereditary offices under former governments.
6. Those held by the kinsmen, dependents and followers of former poligars and zamindars.
7. Those connected with the former general police of the country.

30. Report of the Estate Land Act Committee, Part I, p. 186.
31. S. Sundararaja Iyengar: *Op. cit.*, p. 198.
32. Report of the Estate Land Act Committee, Part I, p. 185.

8. Those held for ordinary village revenue and police service.

9. Those held by various descriptions of artisans, for services due to village communities.

Inams which were recognized as such by the Inam Commissioner were those where possession for 50 years prior to 1858 could be proved. In the case of those other inams where possession for 50 years could not be proved, enfranchisement or conversion into personal property was effected, subject to the payment of a quit rent. Still others were retained under the terms of the original tenure, but with alienation prohibited. A few were reserved or commuted into money pensions. After enfranchisement new title deeds were issued to all inamdars, under which the Government relinquished their right of resumption for a quit rent and gave the right of property to the grantee.

At the present time therefore the inamdars have such titles to land as have been conferred by the Inam Commissioner. In some cases they have both melwaram and kudiwaram rights, and in others only melvaram rights. In those cases where they have only the melwaram right, the occupant has had conferred on him the occupancy right by the Estate Land Act of 1908 and the amending Act of 1936. In those other cases where the kudivaram right too is vested in the inamdar, the occupant has the right to secure occupancy rights under the Estates Land Act Amending Act of 1936 on the payment of one year's rental as compensation to the inamdar.

At present the whole inam area covers an extent of 56,06,098 acres and is scattered over all districts, except Malabar, South Kanara and the Nilgiris. Including minor inams the area will be about 68,72,896 acres.

*The Zamindari Abolition Act, 1948*: The Madras Estates (Abolition and Conversion into Ryotwari) Act was passed in 1948 and received the assent of the Governor-General on 2nd April 1949. The intention of the Act is to abolish the estates held by Zamindars and Inamdars under the Zamindari and Inam tenures respectively and convert them into ryotwari holdings. Under it the Government are empowered to notify the estates and take them over in their entirety with all the accounts, registers and documents relating to them and free of all encumbrances, on payment of a compensation to the estate holders, and grant ryotwari pattas to those who are permitted to receive them. Thereafter the estate holders will cease to be proprietors of the estates, but may

hold some categories of land in the estates on ryotwari pattas. The categories of land which may be held thus are prescribed in the enactment and comprise the private lands of the estate holders and such ryoti lands as were held and directly cultivated by them since 1st July 1939 and which they had received by inheritance or succession or purchase or gift or which they had occupied on relinquishment by the ryots. On the lands held by them on ryotwari pattas they would have to pay the ryotwari assessment.

The other occupied land of the estates will be granted on ryotwari pattas to the ryots or under-tenure holders holding them. The under-tenure holder will be entitled to a patta only on proof that he had held the land prior to the permanent settlement of the principal estate. The ryot will be granted a ryotwari patta on the ryoti land held by him and such *lanka* land as had been in his occupation from 1st July 1939. On all lands held on ryotwari pattas the ryotwari assessment, fixed from time to time, has to be paid directly to Government. The assessment will be based on a settlement which will be carried out as and when the estates are taken over.

The compensation payable to the estate holders are according to a scale laid down in the enactment itself and related to the basic annual sum as defined in the Act. The scale of compensation is as follows:—

1. Where the basic annual sum does not exceed Rs. 1,000/- 30 times such sum.
2. Where the basic annual sum exceeds Rs. 1,000/- but does not exceed Rs. 3,000 — 25 times such sum or Rs. 30,000, whichever is greater.
3. Where the basic annual sum exceeds Rs. 3,000, but does not exceed Rs. 20,000 — 20 times such sum or Rs. 75,000, whichever is greater.
4. Where the basic annual sum exceeds Rs. 20,000, but does not exceed Rs. 50,000 — 17½ times such sum or Rs. 400,000, whichever is greater.
5. Where the basic annual sum exceeds Rs. 50,000, but does not exceed Rs. 100,000 — 15 times such sum or Rs. 875,000, whichever is greater.
6. Where the basic annual sum exceeds Rs. 100,000 — 12½ times such sum or Rs. 15,00,000, whichever is greater.

The basic annual sum is defined differently in the case of the Zamindari and the Inam Estates. In the case of a Zamindari estate it is the sum of the following *minus* certain deductions: (1) 1/3 of the gross annual ryotwari demand in respect of all land in the estate (excluding lanka lands) in respect of which any person other than

the landholder is entitled to a ryotwari patta ; (2) 1/3 of the gross annual ryotwari demand on lanka lands held under patta by persons other than the landholders and all lanka lands considered sufficiently permanent for the purpose of levy of ryotwari assessment ; (3) 1/3 of the average net annual income derived from all lanka lands in the estate, capable of being treated as patta lands, including those which are considered sufficiently permanent for the purpose ; (4) 1/3 of the average net annual miscellaneous revenue derived from all other sources, excluding the land held by the landholder himself ; (5) the whole of the jodi, kattubadi or other amount payable by an inamdar or under-tenure holder in the estate to the landholder. The deductions to be made from this sum are 5% of gross annual demand under items (1) and (2) on account of establishment charges, etc. and 3⅓% of the demand under (1) and (2) for the maintenance of irrigational works.

In respect of inam estates this formula with certain modifications applies. The modifications are : (1) under items (1) and (2) the whole of the ryotwari demand instead of ⅓ of it will be included in the calculation of the annual sum, (2) the deductions from items (1) and (2) will be only 3⅓% and not 8⅓% as in the other case, and (3) from the total sum, the whole of the jodi or quit rent or kattubadi payable by the landholder to Government or a superior landlord will be deducted.

Certain features of these formulae need explanation. The reason for difference in the two formulae is that the zamindar has been paying peshkush out of his receipts which at the Permanent Settlement roughly amounted to ⅔ of his receipts from ryoti or inam land and so could retain only ⅓ of the collections as his margin, while the Inamdar has been holding the land revenue or rent free or on a small jodi or quit rent. So in the latter's case the jodi is deducted from the total sum received by him. The additional deduction of 5% from items (1) and (2) in the case of the Zamindar is ostensibly because he has to meet establishment charges out of his receipts at present, which the Inamdar has not to do. Secondly the income of the landholder from land held by patta holders in his estate is to be calculated on the basis of the ryotwari demand which would be settled after the estate had been taken over, and not on the basis of the actual rents received by him before notification. This is on the presumption that the rents payable by the ryots had been unjustly and illegally enhanced by the landholders since the permanent settlement, and so what they are legally and in equity entitled to is a rate of rent which corresponds fairly closely to the Government demand in ryotwari areas. This

is expected to greatly reduce the annual sum and correspondingly reduce the compensation payable also.

Though the scale of compensation payable and the method of calculating it are laid down in the Act, the manner and time of payment are left to be prescribed later by the Government under rules approved by the State Legislative Assembly. Since the determination of the compensation can be done only after the estates are taken over and the ryotwari settlement completed, provision is made for certain interim payments to the estate holders. The interim payment thus provided for is, every year, the basic annual sum roughly calculated, subject to adjustment later when the correct basic annual sum is known. These interim payments will not constitute any part of the compensation.[32a]

When the compensation is finally determined for each estate, it will be deposited by the Government with the Tribunal which will be set up for adjudicating on the claims of the creditors, maintenance-holders and sharers of the estate, and it shall be the duty of the Tribunal to meet the claims of the creditors and maintenance-holders of the estate out of the compensation amount, before it is paid to the sharers, in accordance with their respective rights. An appeal from the decision of the Tribunal to a Special Tribunal, consisting of two Judges of the High Court, within three months of the Tribunal's decision, is provided for in respect of the division of the compensation amount. In addition to dividing the compensation amount among the maintenance-holders and sharers of the estate, it is the duty of the Tribunal to decide also the question whether the maintenance-holders are entitled to ryotwari pattas in respect of the private and other lands held directly by the landholder. But any decision made by the Tribunal in favour of granting them pattas is subject to the provision that not more than ⅕ of such land in the estate shall be thus alienated to them.

For effecting the ryotwari settlement of the estates taken over, Settlement Officers will be appointed who will work under the direction of the Director of Settlements and the superior oversight of the Board of Revenue. The Settlement Officers will examine all claims to ryotwari pattas, including the claims of the estate holders, and decide according to the clauses of the Act relating to it. His decision is subject to the appellate authority of the Tribunal, but the Tribunal's decision is final and cannot be questioned in a Court of Law. On the basis of these decisions pattas will be issued under a ryotwari settlement effected with the pattadars.

32a. A recent amendment of the Act permits an advance payment of part of compensation, on the estates being taken over.

In accordance with this Act a few estates, numbering in all about 33 with some of the major zamindaries included in it, have already been notified and steps are being taken to take them over.[32b]

*Leasing Systems*: In all the different systems of land tenures explained above, the holder of land, be he Zamindar, Janmi, Inamdar or Ryot, sub-lets the land for cultivation to sub-tenants under oral or written contracts or on customary terms. The zamindar can carry on direct cultivation only on his private or 'Sir' lands, the rest of the occupied area being in the possession of occupancy tenants. But even in the case of private lands, those holdings which are not cultivated by him with the aid of farm servants and agricultural labourers, are leased out to tenants-at-will. Many occupancy ryots too, holding lands under the zamindar, do the same thing and remain for all practical purposes mere rent-receivers. Large inamdars and janmis and occupancy tenants and kanomdars under these too, when their holdings are large or they are non-resident in the locality or when they are disinclined to do the work of farming themselves, sub-let their lands. This practice has now extended to the ryotwari areas among pattadars. Many of the more well-to-do among them are non-cultivating proprietors even when they belong to agricultural classes and are resident in the village itself. Brahmin holders invariably lease out their farms, for religious injunction prevents them from actually employing themselves in cultivation. But other castes too have adopted that practice from necessity or choice.

In the Chapter on Agricultural Population a full analysis of these different agricultural classes is made. As is seen there 3·1% of the rural population are non-cultivating proprietors, while 14·3% are tenants. Among tenants some are non-cultivating tenants, roughly 1·6% of the rural population. These latter abound in South Kanara, Malabar and Vizagapatam. Most of them are privileged tenants holding saleable rights in land, such as, occupancy tenants under Zamindars or Inamdars, or kanomdars under Janmis. Quite a number, however, especially in South Kanara, are tenants-at-will, holding land for short or long periods. The *vavudakini* lease for a term of years is usually held by tenants who do not possess substantial rights in land, and even the *malgini* lease in perpetuity when restrictions are placed on alienation, fall into the same class. These lease holders frequently sub-let their lands and subsist on the margin of difference between the rents they receive and the rents they have to pay.

The large majority of the leases of the State fall into two classes, the *Kuthagai*, sometimes called also *Kattukuthagai*, and the

32b. Government expect to take over all Zamindaries by the end of 1950.

*Varam.*[33] The Kuthagai system is a fixed rent system, either in money or kind, but more often than not, actually paid in kind. In garden cultivation money rents are the rule, but in dry or wet cultivation when grain crops are raised, the rent is fixed in grain. In the cultivation of commercial crops, as also occasionally in grain crops, money rents are fixed. The rates of rent vary greatly, the actual rate depending on such factors as the type and class of soil, existence of irrigational facilities, suitability for use as seed beds, advantages of location and contiguity, pressure of population and degree of competition, the level of agricultural prices, etc. The variation ranges from Rs. 5 per acre to Rs. 20 and Rs. 25 per acre and in special cases goes up to Rs. 50 per acre.

In the Resurvey of South Indian Villages conducted by the Department of Economics, University of Madras, in 1936-37, the following rates were found:—

Vadamalaipuram, Ramnad District
    Land without a well — Rs. 10 per acre (p. 11)
    Land with a well — Rs. 25 per acre (p. 11)
Gangaikondan, Tinnevelly District.
    Ragi or Cholam land — Rs. 25 per acre (p. 70)
Eruvellipet, S. Arcot District.
    Groundnut as a wet crop on dry land — Rs. 75 per acre (p. 153)
Vunagatla, W. Godavari District.
    'Pulladi' (Black soil tract) — Rs. 10 per acre (p. 219)
    'Guruvu' (Sandy Palmyra tract) — Rs. 5 per acre

In the enquiry conducted by the Economic Enquiry Committee in the 16 villages of East Godavari, West Godavari and Kistna Districts in 1929, after prices had started falling, the rates of rent were seen to vary in the following manner.

Kistna District — Dry — Rs. 6 to Rs. 24·8 per acre
    Wet — Rs. 56 to Rs. 81 „
West Godavari District — Wet — Rs. 20-12 to Rs. 80 „
East Godavari District —
    Upland Wet — Rs. 9-14 to Rs. 27-3 per acre
    Dry — Rs. 6 to Rs. 14·4 „

Though these figures are not up-to-date and may not be current at the present level of prices, they nevertheless help to show the wide variation in the rates of rent under the fixed money rent system.

33. In the Telugu area these are called 'Polu' and 'Koulu' respectively.

The fixed rent in kind is largely prevalent in grain cultivation and is usually expressed as so many measures of grain per acre or ma or cawni or veli, whichever is the unit of land adopted. Here too the range of variation is great and depends on the same factors as are relevant in the case of money rents. In the Resurvey adverted to above, the variation seen was between 350 Madras measures per acre in Eruvellipet in S. Arcot and 1,200 measures in Dusi in North Arcot. It was 550 measures in Palakkurichi and 784 measures in Gangaikondan.[34] Even wider variations were noticed by the Special Settlement Officer who carried out Re-Settlement operations in East Godavari, West Godavari and Kistna districts in 1920-24; from 127 seers per acre in Chevar, Kistna district, to 1,865 seers in the same village.

In the kuthagai system all the expenses of cultivation are borne by the tenant, the landlord meeting only the kist payment, and the whole of the gross produce minus the fixed rent is retained by him. The whole of the straw also belongs to him, but in some localities four headloads of straw per acre are given to the landowner. Though the rent by contract is a fixed payment and legally enforceable at the will of the landlord, custom in most places requires that in years of bad harvests remissions should be given. In some places in such times the kuthagai contract is converted into the sharing system and the landlord and tenant take equal shares of the gross produce.

No uniformity appears to exist in the matter of the terms of the lease. From annual leases to periods of three, five and six years are usually seen in many localities, but the large majority of them are one year leases, freely and almost automatically renewed for a number of years.

The available evidence goes to show that this system is becoming more popular with tenants and is fast replacing the sharing system. This seems to be the reversal of the opposite tendency noticed by the Economic Enquiry Committee in the Districts of East and West Godavari and Kistna in 1929.[35] The earlier tendency was however accompanied by a fall in lease values, and that may have accounted for it. When prices fall, lease values also fall and then it becomes profitable for the landlord as well as the tenant to adopt the sharing system. But in the Resurvey alluded to above, the unmistakable tendency was for kuthagai to replace varam. At the present level of prices this would naturally

34. p. 345.
35. Report, p. 38.

get accelerated. The great advantage of the kuthagai sytsem is that any excess yield, as the result of extra effort or expense on the part of the tenant, is exclusively enjoyed by him, and when prices rise relatively higher than costs, it becomes fully worth while for the tenant to incur the additional cost. But, as all the world over, the fixed rent lease is open only to the more well-to-do tenants, i.e. those who own land of their own, for, in the first place, it entails the meeting of the whole expenses of cultivation by the tenant, which only the richer among them can afford, and secondly, involves the offer of a guarantee to the landlord that the rent will be paid promptly. In the Circars, as the Economic Enquiry Committee, 1929, observe, the landlords prefer the bigger ryots who own 10 acres or more of land of their own, as tenants, and are willing to lease out their lands to them at a cheaper rate than to landless tenants.[36] Lacking land, the latter find it extremely difficult to raise sufficient credit in the village for meeting their expenses of cultivation and other payments.

The Varam system is prevalent all over the State, with the exception of the districts of Malabar, South Kanara and the Nilgiris, and approximates the metayage system found in all old countries. This is a case of joint adventure on the part of the landlord and tenant, both participating in the work of cultivation and sharing the produce on the basis of an agreed ratio. The ratio depends on the relative contributions made by them and varies from 5/6 : 1/6 to 1/2 : 1/2. If the landlord supplies all the manure and seed, supervises cultivation and meets the harvesting charges, and the tenant supplies only plough and oxen and the labour required, the ratio of 5/6 to 1/6 is adopted. In the village of Dusi in North Arcot, according to the Resurvey, under this system of varam 5/6 of produce and one headload of straw went to the landlord. The tenant got in addition to 1/6 of produce, *kalavasam*, *thaladi*, *poradi* and *minwai* — in all about 52 Madras measures. If the tenant supplied only labour without ploughs and oxen, his share of produce was diminished to 7/60, and the landlord got all the rest and all of the straw.[37]

In Vadamalaipuram in Ramnad District, on the other hand, the tenant bears all expenses of cultivation, from soil preparation to harvesting, the landlord paying only the kist, and the produce is divided between them in the ratio of 50, 50, and the tenant gets all the straw. In Gangaikondan in Tinnevelly district, four different systems of varam were noticed in the Resurvey :

36. Report, Vols. I-III, p. 35.
37. Resurvey, p. 187.

1. The cultivation expenses are met by the tenant, but the landlord has the responsibility to buy manure and debit the expenses to the tenant's account, or lend money to him for that purpose. He also pays the kist. Out of the harvest, the reaping charges are met and the remainder divided in the ratio of 1/3 and 2/3 for tenant and landlord. 1/10th of straw belongs to the landlord. This is prevalent on lands distant from the village.

2. The landlord pays the kist and supplies manure. But all other expenses are met by the tenant. Harvesting charges are common. The landlord's share of produce is 3/4 and the tenant's 1/4. Strictly all the straw belongs to the tenant, but landlords, if they are rich and powerful, secure 1/4 of the straw also outside the contract. This system is seen on lands near the village.

3. Pare (nominal)—The tenant's function is merely to watch the crops growing, to water it timely and take care of the bunds. His share is 1/21 of every kottah of yield. In addition he receives presents from the landlord at Pongal and Deepavali and certain money presents at other times.

4. On inferior classes of land the *ser-varam* is prevalent. The produce is equally divided between landlord and tenant.[38]

Of these four systems, 1, 2 and 4 are regular systems of tenancy, but it is very doubtful whether the third is a system of tenancy at all. As Profs. Thomas and Ramakrishnan in their Observations say, it looks more like a system of direct cultivation with hired labour, the payment of wages being deferred till after the harvest.[39]

In all cases of varam it is usual for the landlord to supervise cultivation and make advances of cash or seed. The seed lent is recovered after harvest, with a high percentage of interest, but this is justified on the ground that it is really a dryage on fresh grain.

The varam system is peculiarly suited for poor tenants who cannot afford to undertake the risks of cultivation and who in many cases can contribute only their labour. To the landlord also it is beneficial, in that he derives all the advantages of direct cultivation at the same time as he enlists the wholehearted interest and co-operation of the actual cultivator. Landless tenants invariably take land on varam and avoid falling into the ranks of mere agricultural labourers.

38. Resurvey, pp. 69 and 70.
39. Resurvey, p. 345.

## Chapter XI

# CREDIT NEEDS OF AGRICULTURE

Capital investments in agriculture broadly fall into three groups, viz., long term investment on the purchase of land and permanent improvements of it, intermediate investment on cattle, tools and implements and short term investment on the annual agricultural operations, including marketing. For all these purposes the agriculturists have to borrow, for, barring a few well-to-do landlords and farmers, cultivators all the world over have to depend upon outside funds to meet their financial requirements. Agriculture, as organized in every land, exists in comparatively small, isolated, independent units and so is denied the facility which industry has, of gathering large aggregations of owned capital through the application of the joint-stock principle. This fact limits the scale of operations on the one hand and on the other compels an utter dependence on outside financing agencies. The smallness of the scale of production correspondingly reduces capital needs too, but the initial poverty of the large majority of agriculturists prevents the independent contribution of even the little that is required, by themselves.

In Madras, where 77% of the pattas pay Rs. 10 and less as land revenue and the average size of the holding is no higher than 3·70 acres, the cultivators, be they owners or tenants, remain so poor that they can hardly be expected to contribute anything unaided towards the finances of the undertaking. Many of them are so steeped in debt already that in addition to the credit they need for investment on land and agriculture, they require large sums to meet prior debt and even their domestic expenditure between one harvest and another. The pressure exerted by their circumstances virtually compels them to part with a large part of the proceeds of the harvest, without retaining a sufficient quantity for their own consumption, and depend upon cash and grain loans later in the year to meet their consumption requirements. To such, the non-availability of credit is the non-availability of the sustenance of life and of efficiency, and to the industry concerned, the denial of its life blood.

Corresponding to the capital needs of agriculture, the types of credit needed also fall into three kinds. For the repayment of prior debt and for the purchase and improvement of land, credit

will be required for long periods, ranging between 10 and 30 years, the actual length of the period depending on the productivity of the investment and the margin available in the income of the borrower to meet the debt charges. For the purchase of cattle, tools and implements, loans ordinarily having periods of 3 to 5 years are required. In some cases however, fairly frequent in this State, it is customary for the cultivators to purchase cattle in the ploughing season and sell them as soon as their labour on the field is finished, and in such cases the loans taken for the purpose may be repaid in a shorter time. Conversely, unexpected mortality of cattle, through any one of the pests, may necessitate fresh borrowing even before the older loan is repaid, and indefinitely postpone the repayment of both loans. Ordinarily however if nothing untoward happens, this type of loan may be repaid within the period mentioned above.

For meeting the expenses connected with the annual operations, short period loans are required, repayable after the harvest. The period hardly exceeds a year, though in some localities where the agricultural season between ploughing and reaping is shorter, eight to ten months will be the usual period. These loans are needed for the conduct of ploughing, sowing, transplanting, hoeing, weeding, manuring, reaping, etc., and for meeting domestic expenditure, and should be available in small amounts and at short notice. Borrowing begins in May and goes on till December, and repayment is spread over the months of January, Fabruary and March, according to the actual time of the harvest. The period of repayment may be slightly put off by a few months, if harvested crops are held back from the market for higher prices. The best time for sale is usually May, for by that month the price is high enough for remunerative sales. The price may rise still higher after that, but the rise will not compensate the cultivator for the additional carrying costs and wastage and dryage.

Short term loans are an annual requirement, unlike the other two types which the cultivator has occasion to resort to only at times. Purchase of land or permanent improvement to it is of rare occurrence, and in the majority of cases, many generations may pass without any loan being raised for these purposes. Land hunger among cultivators, large and small, is undoubtedly great, but it is only the more well-to-do who can command the necessary credit for land purchase. During the war period in this State, according to the findings of the Economist who conducted the survey into rural indebtedness, much money was borrowed for land purchase. Two exceptional circumstances contributed to it, viz., the availabi-

lity of land for purchase and easy terms at which money could be borrowed. Normally too some loans are taken for land purchase, as is revealed by the statistics relating to the transactions of land mortgage banks, but loans for improvement to land are of negligible amount. Some borrowing from the Government under the Land Improvement Loans Act takes place annually, but the amount involved bears an insignificant proportion to the total long-term loans outstanding. The total long-term debt outstanding is undoubtedly large, but its magnitude should not be attributed to long-term borrowing for investment. To a large extent it is the result of the conversion of unpaid short-term debt into mortgage debt. The agriculturists as a rule do not distinguish between long-term, short-term or intermediate debt, except when they borrow from co-operative institutions, but in the first instance take short-term loans for all purposes, on katha accounts or on promisory notes. Such loans when unpaid and swollen by the addition of interest, are in course of time transformed into mortgage debts, with or without possession of the property mortgaged. This is evidence not of productive investment, but as the Royal Commission on Agriculture have said, 'of a weak debtor having fallen into the hands of a strong creditor'. Though annually such long-term or mortgage debt may increase, there can be no regularity in that increase or any relation between it and the long-term needs of agriculture.

Borrowing for the purchase of cattle or of implements is of more frequent occurrence, and with most cultivators, the non-existence of the practice of building up a depreciation or replacement fund necessitates a recourse to it, whenever replacement has to be effected. In addition to super-annuation and oldage mortality among cattle, a replacement demand arises, unforeseen and at moments when the cultivators are least prepared to meet it, through the wide prevalence in the country of infectious diseases and consequent disablement and destruction. This occasions fairly wide fluctuations in the demand for intermediate credit from year to year.

As regards tools and implements, for the purchase of which also intermediate credit may be needed, the occasions for borrowing will be fewer and less regular, as their life depends more upon utilization than on a mere passage of time. Only few farms are equipped with costly implements or machines, such as the tractor, the seed drill, the sugarcane crusher, the electric pump, etc. The common implements in most farms are the plough, wooden or iron, the crowbar, the sickle or the scythe and perhaps a spade. The

more well-to-do farmers who ordinarily have a surplus for sale in the market, may possess a cart or two, but many of the smaller holders among them depend upon hired carts for the transportation of their produce to the market town. The more costly implements are obviously stocked by the richer farmers who may not need to borrow funds when a replacement demand arises. The wooden plough is the ubiquitous implement, but its replacement is not so serious a financial proposition as to need deliberate provision for it, as for work animals. In the pre-war period a wooden plough could be got for Rs. 2 or 3 with shaft and share complete, and replacement of shaft or share used to cost only about 4 as. to 8 as. Even the standardized Meston iron plough was priced at Rs. 7/- only. At the present time prices may have doubled or trebled, but even so the demand for credit which their purchase occasions cannot but be relatively insignificant.

Short term credit, strictly needed for the financing annual agricultural operations, is a recurring feature, and though it is raised for all purposes, productive and unproductive, and consequently varies within wide limits, is nevertheless capable, in its productive portion, of being computed with a rough accuracy. This credit is in constant demand, for without its aid the large majority of the cultivators of the State will be denied the opportunity of pursuing their life's avocation.

For the State as a whole the short term credit required for the conduct of agriculture and for the sustenance of the working family during the year may be roughly placed at Rs. 135 crores. In estimating this amount, it is necessary to avoid the mistake of thinking that this amount equates with the cost of cultivation and cost of maintenance of the families involved. Much the larger part of cost of cultivation does not appear as a cash expense at all, and a great part of the cost of maintenance too is met by what is produced on the land. Further, many of the well-to-do farmers have funds of their own with which to meet their out of pocket expenses, and the owned capital which they provide will be so much deduction from the credit requirement of agriculture, Short term credit requirement will thus be a fraction of the total cost of production and maintenance, with the individual need for it varying with his financial standing, with the locality, size of the farm, the members of the family and the type of operations conducted on the farm.

Nicholson in 1895 estimated that there was an ordinary borrowing of grain worth Rs. 30 to Rs. 36 by a ryot family of ten persons during the year for maintenance and production. This is supple-

mented by small cash borrowing too to meet such expenses of cultivation and of maintenance as require cash payments, but he did not estimate this amount per family, but roughly placed the two together in the aggregate as personal credit for the whole State at Rs. 25 crores. It is obvious that this estimate cannot be made the basis of any present estimate for more reasons than one. In the first place, over half a century has elapsed between then and now, during which costs of cultivation, costs of maintenance, agricultural practice, size of families and of holdings have all undergone marked changes. Secondly — and this is relatively more important — what Nicholson tried to estimate was what the ryot actually borrowed short-term under conditions where he did not discriminate between short-term and long-term purposes, while the present estimate has necessarily to be related to the short-term credit requirement, strictly defined as such. This can be discovered only by computing the cash expenses involved in agricultural production and adding to them the cash and grain loans which the agriculturists are compelled to take for maintenance. The Madras Banking Enquiry Committee following this method estimated that on wet delta lands cash requirement would work out to Rs. 30 to 50 per acre for a single paddy crop, the variation depending on the nature of the manure put in. According to them, Rs. 30 per acre would be the minimum required, without providing for the living expenses of the family, and when that too were added the figure would be nearer Rs. 50 than Rs. 30. For double cropped land, double this or a little less than double would be needed, but as it would be possible to repay the first loan before a second is taken, the loan outstanding during the year, or the credit required would not increase thereby. They found it impossible to make any estimate for dry lands, as productive activity there fluctuates with the vagaries of the monsoon. For the 5·25 million acres of ryotwari wet land at Rs. 30 per acre, they estimated the credit requirement at Rs. 15·75 crores.

Mainly following this method, Mr. S. Y. Krishnaswamy in his *Rural Problems in Madras* has estimated the cash requirement for cultivation purposes alone for the 12 million acres of irrigated crops at Rs. 36 crores. For the dry area he has fixed the figure per acre at Rs. 15, obviously a guess, and estimated the cash requirement of the 25 million acres under dry crops at Rs. 38 crores. Out of the Rs. 74 crores of cash required, a third is supposed to be contributed by own funds, and so he places the total credit requirement of the State to meet cultivation expenses at Rs. 50 crores.

These estimates take into account gross area sown under both wet and dry cultivation and not net area, and that fact has slightly

vitiated the final estimate. When a double crop is taken, the cash requirement is increased no doubt, but on the argument advanced by the Banking Enquiry Committee, there will be no corresponding increase in the credit needed. If proper allowance is made for that, the final figure on the basis of his own rates per acre will be Rs. 40 crores and not Rs. 50 crores.

To this figure he has added Rs. 10 crores as being required for payment of interest on prior debt, on the assumption that the subsisting rural debt at present will be round about Rs. 100 crores. This assumption is proved wrong by the investigation conducted by the Economist into the rural debt of the State. On the basis of the latter's estimate, the provision for interest payment will have to be increased to a little more than double at 10% rate of interest or to Rs. 12 crores or thereabouts at 6%. So altogether after making the needed corrections, his estimate will have to be brought down to Rs. 52 crores. He found it impossible to make even a rough estimate of the credit needed to meet the domestic expenditure of the cultivators and so excluded that item from his calculations. This is doubtless a serious lacuna in his estimate.

Before accepting his estimate, even with the needed corrections, it is legitimate to ask whether Rs. 30 per acre of wet land and Rs. 15 per acre of dry land would be appropriate under present conditions of high costs. He has adopted Rs. 30 per acre of wet land as a suitable 'long range' figure, implicity believing that the high level of prices and costs will sooner or later go down to the pre-war levels. There is no sign as yet of any such happenings, and besides, it is an open question whether a reversion to those levels should be permitted at all. Doubtless, it is the appropriate long range figure that should be adopted in the calculation, but what it probably is cannot be determined at the present time. The only thing that may be done now is to calculate existing needs.

The Economist who conducted the enquiry into rural debt in 1945, has incidentally suggested that Rs. 30 to 36 worth of grain loans for a ryot family of ten persons, accepted as the basis of computation by Nicholson in 1895, should be increased to Rs. 70 in 1945 to make allowance for changed circumstances. At this rate, for 8½ million families of 5 persons in the State; the requirement will be round about Rs. 29 or 30 crores. This figure admittedly includes only grain loans and such petty cash loans as are taken on Katha accounts, and excludes the short-term borrowing which ordinarily takes place on promissory notes. If to this is added a sum calculated on the basis of amount required

per acre for cultivation, there may be some double counting involved in the procedure.

The best method therefore appears to be to take the Banking Enquiry Committee's figure of Rs. 50 per acre of wet land, stated to include not only the cash required for cultivation but also for domestic expenditure of the cultivators, and approximately increase it so as to provide for the increased cost of production and maintenance prevalent now. Double this figure of Rs. 50 per acre will not be far wrong for the wet lands, and half of it for the dry areas. The total amount thus required would then be, for the 10 million acres of irrigated land, Rs. 100 crores, and for the 20 million odd acres of dry land, about another Rs. 100 crores. If a third of this is contributed by own funds, the remainder to be met by short-term borrowing will roughly be Rs. 135 crores. This may be considered an inclusive figure, providing for all legitimate short-term borrowing. No special provision for payment of interest on debt outstanding or for the payment of kist seems called for, as they have to be made, and are usually made, after harvest out of the cultivator's income. In special cases loans may be taken for these purposes too, as for certain other illegitimate purposes, but considering the cultivators as a class, these two items do not appear to be permissible.

While it is difficult to make an estimate of the short-term credit requirements of the agriculturists, it is even more difficult to make estimates of intermediate or long-term requirements. In the case of long-term credit, no limit even can be placed by way of a minimum or a maximum, as improvements to land are by their very nature fitful, and undertaken, not on the basis of a regular plan, but as and when funds are available and ideas regarding the productivity and beneficial character of such improvements percolate into the community. As the Royal Commission on Agriculture has remarked, "there is not so much lack of capital for fixed investment as lack of ideas for utilizing it for productive purposes". Furthermore, much of permanent investment in land is nowadays made by the State, by way of provision of irrigational facilities, road building, prevention of soil erosion, etc., that the individual sphere of action is being progressively curtailed. What is still left to him is perhaps deep ploughing, levelling, fencing, well-digging, etc. which once effected would not require repetition for many years at a stretch.

Intermediate credit, as has been stated above, is required for replacement of cattle and implements, and if some idea can be gained of that replacement demand, a rough estimate of the credit

required for it may be made. There are 8 million work animals, including buffaloes, on the farms of Madras, 1/10 of which may be considered to be the annual loss through mortality and superannuation. Wooden ploughs, nearly 3·8 million in the State, are said, on the average, to have a life of 6 years, and so the annual replacement will amount to Rs. 600,000. Capital required for these two items will roughly be Rs. 10 crores at an average price per bullock of Rs. 100 and of a plough of Rs. 7. If, as in the case of short-term requirements, it is postulated that a third of the amount is contributed by owned capital, the total intermediate credit needed will not exceed Rs. 7 crores. This amount will probably cover replacement charges pertaining to other implements as well.

## CHAPTER XII

# RURAL INDEBTEDNESS

According to the estimate made by the Economist, appointed by the Government of Madras to enquire into the problem of rural indebtedness in Madras, the rural debt of the State in 1945 was Rs. 217·71 crores. This figure is higher than Mr. W. R. S. Sathianathan's estimate of Rs. 200 crores in 1935 and the Madras Banking Enquiry Committee's estimate of Rs. 150 crores in 1930. Greater accuracy is however claimed for the latest estimate by the Economist on the ground that it was based on direct enquiries conducted by independent, but trained, investigators into 160 villages of the State, selected on the basis of random sampling. One family in every thousand for the State as a whole was interrogated by the investigators, and the possible error involved in the estimated is stated to be only 3%. As far as the present debt is concerned this claim may be conceded, for direct enquiries based on random sampling are usually, in most countries, expected to yield better and more reliable results than other methods. But the accuracy of the results obtained under this method depends to a large extent on the accuracy of the data collected by the investigators, and it is unfortunately here that the real difficulty lies. The agriculturists of the country are a queer suspicious lot and dread direct investigation on financial or economic matters. Usually they evade questions put to them, or give elusive answers, and often hide the real state of affairs. They either exaggerate their financial difficulties or understate them, according as their own imagined purpose of the enquiry is going to be beneficial or harmful to them. It is not only official, but even non-official enquiries, that are thus tainted, and though statistically the error may be only 3% + or —, in reality a larger margin of error has to be provided for. This becomes all the more necessary from the peculiar and abnormal circumstances which prevailed at the time of the enquiry. The enquiry was begun in June 1945, before the cessation of hostilities, when the abnormal war-time conditions still prevailed. Agricultural prices had risen, but were under severe control; both cost of production and rural cost of living were rising; so too were wages, though not in the same degree. Distribution of foodgrains within the State was in Government hands; procurement existed in both surplus and deficit districts; informal rationing, though not statutory, prevailed in all rural areas, yet withal a black market flourish-

ed where prices were generally higher than controlled prices. The small savings drive was still on, and propaganda, if not pressure, for contribution to the Governor's War Fund and the Viceroy's War Purposes Fund was being pursued most vigorously. Much money was being spent in rural areas under the Grow More Food Campaign, and loans of various kinds were being freely and rather indiscriminately given to whip up the production of foodgrains and vegetables. Under such circumstances it was easy for the men interrogated to misunderstand the purpose of the investigation and give, what in their view, is a desirable orientation to the answers. It is only natural for them to suspect that the purpose of the enquiry is to discover the measure of prosperity which has attended them, in order to extract more out of them for war purposes by way of loans or taxes, or for exploring the possibility of reducing agricultural prices, or alternatively, to estimate the illegal gains made in the black market, or yet again to assess their credit worthiness for the purpose of granting loans. All kinds of vague ideas will enter their minds, for the agriculturists of today are more alive to the events that happen round about them than they were some twenty or even ten years ago.

What accuracy should therefore be attributed to the data collected by the investigators thus remains indeterminate, and it is really unfortunate, almost amounting to a serious defect, that the Economist who conducted the enquiry, unlike some previous investigations, relied solely on direct interrogation to make his estimate. The defect does not consist in the employment of one method alone, but its employment in circumstances unfavourable to its success. The fact that the enquiry included the state of affairs which existed in 1939 and the reduction of debt which took place between that year and 1945 would have only tended to confirm their suspicions.

*Error in the Estimation of Total Debt*: Apart from this, it is seen from internal evidence that an error has crept into the estimation of total debt. The method adopted by the Economist was to multiply the total debt of 8,530 families interrogated, by 1,000, on the assumption that there were 8,530,000 families in the rural population. But in calculating the total number of families he has evidently committed a mistake. His original assumption that the family has an average size of 5, made in connection with the determination of the number of families to be interrogated — a statistical requirement — was adhered to even after the results of the enquiry were available to him. The enquiry revealed that the average size of the families interrogated was 6·2 and not 5. This

is seen in the figures deduced by him as regards debt per family and debt per capita. A debt of Rs. 255·5 per family and a debt per capita of Rs. 40·8 can be reconciled only on the basis of an average size per family of 6·2. With an average size of 6·2 per family there would be, for the rural population of 42·65 million in 1945 (the figure given by the Economist), only 6,879,032 families and not 8,530,000. So multiplication of the total debt of 8,530 families by 1,000 was not justified.

If the correct calculation is made, the total debt in 1945 would be seen to have been only Rs. 174 or 175 crores. This same figure will appear if per capita debt, as revealed by the enquiry, is made the basis of the calculation.

So before accepting the estimate for 1945, it has to be reduced to the figure of Rs. 175 crores. Debt per rupee of assessment and debt per acre of occupied land also have to be correspondingly reduced, as these were subsequently deduced by the Economist from the State total.

*Estimate for* 1939 : An identical error has vitiated the estimated total debt for 1939. That debt too has to be reduced from Rs. 271·91 crores to Rs. 210 crores. Even so the thesis made by the Economist that between the years 1939 and 1945 there was a net reduction in debt is substantiated. But before accepting the figure for 1939 and making it the basis of the comparison with the debt of 1945, we have to look into the probability of its accuracy. It is based on data collected in 1945, relating to the year 1939, after the lapse of a period of six years. The question to ask here is whether any reliability can be placed on the answers given by illiterate agriculturists, who do not as a rule maintain accounts, to queries made in 1945 relating to their financial condition in 1939. About 72·5% of the families questioned belonged to the classes of small holders, tenants and landless labourers. In absolute numbers they were 3,784, 1,130 and 1,279 families respectively, out of the 8,530 families questioned. Obviously it is difficult, almost impossible, for them to state with any degree of accuracy their financial position six years prior to the date of the enquiry. This conclusion is fortified by the consideration that a six year period is a long enough period for many changes to take place in the number of families, in their size, in the headship of families, etc., so that it would have been difficult for the people interrogated to relate any lingering memory they may have had regarding their past with the particular year 1939.

The Economist conscious of this defect, tried to test the correctness of the estimate, by the application of a formula, viz., the percentage that debt outstanding to co-operative institutions bore to the total debt in the two years, 1939 and 1945. If the percentages were found to be the same or about the same, or any difference could be explained away by reference to alterations in the circumstances of the two years, the estimate could be held to be correct. But unfortunately the formula itself was incorrectly formulated, for the Economist in formulating it considered the debt outstanding against individuals in primary agricultural societies alone, but in the case of Land Mortgage Banks he took the figures relating to the principal lent during the year. In both cases it should have been debt outstanding against members, for the proportion it bore to total debt was the relevent point.

When the needed alteration is made in the formula, it fails to give any support to the accuracy of the estimate of total debt in 1939. The percentages are seen to be 3·05 and 3·31 for 1939 and 1945, instead of 1·44 and 1·31 for the two years respectively given by him. If the new percentages indicate anything at all, they signify that the estimate for 1939 should be reduced by about Rs. 20 crores. Even if the Economist's own erroneous figures of total debt are made the basis of calculation, the percentages are seen to be 2·35 and 2·70 respectively. The relevant figures are given below:

TABLE XX

| | 1939-40 | 1944-45 |
|---|---|---|
| 1. Economist's estimate of total debt. | Rs. 271,92 lakhs | Rs. 217,71 lakhs |
| 2. Correct estimate of total debt. | Rs. 210,00 " | Rs. 175,00 " |
| 3. Debt outstanding against individuals in primary land mortgage banks. | Rs. 222·09 " | Rs. 228·90 " |
| 4. Debt outstanding against individuals in primary agricultural societies. | Rs. 419·27 " | Rs. 359·81 " |
| 5. Total of 3 and 4. | Rs. 641·46 " | Rs. 588·71 " |
| 6. Percentage of 5 to 1. | 2·35 | 2·70 |
| 7. Percentage of 5 to 2. | 3·05 | 3·31 |

(Co-operative figures are taken from the Reports on the working of Co-operative Societies in Madras and the Statistics relating to the Co-operative Movement published by the Reserve Bank of India).

The conclusion is therefore irresistible that the estimate for 1939 cannot be accepted. It is futile therefore to effect any comparison between the debt positions in the years 1939 and 1945.

*The Debt of* 1945: The total rural debt of the State in 1945, after the elimination of the error mentioned above, was Rs. 175 crores. This debt is distributed among the five classes into which the Economist has classified the rural population in the following manner:[1]

TABLE XXI

| Class I | Class II | Class III | Class IV | Class V |
|---|---|---|---|---|
| Landlords owning 25 acres and above | Landlords owning between 5 and 25 acres | Landlords owning below 5 acres | Tenants | Landless Labourers |
| Percentage distribution of total debt among the 5 classes | | | | |
| 10·8 | 41·0 | 38·7 | 7·0 | 2·6 |
| Per capita debt for each class | | | | |
| Rs. 113·3 | Rs. 59·4 | Rs. 37·6 | Rs. 21·3 | Rs. 8·3 |

The distribution of this total among the main regions or zones into which the State is divided by the Economist, has not been worked out by hm. But he has given figures relating to debt per family and debt per capita for all the ten regions. These figures[2] would give a rough idea of the incidence of debt.

TABLE XXII

*Average debt per family and per person in each zone in 1945*

| Zone | Debt per family | Debt per capita |
|---|---|---|
| | Rs. | Rs. |
| 1. Vizagapatam .. | 289·2 | 42·9 |
| 2. Circars Coastal .. | 336·4 | 53·9 |
| 3. Circars Uplands .. | 268·5 | 42·5 |
| 4. Deccan Districts .. | 269·7 | 46·3 |
| 5. Carnatic .. | 327·9 | 56·2 |
| 6. Cauvery Delta .. | 191·9 | 31·1 |
| 7. Central Districts .. | 231·2 | 37·2 |
| 8. Extreme South-West .. | 140·1 | 22·3 |
| 9. Extreme South-East .. | 253·8 | 43·9 |
| 10. West Coast .. | 307·6 | 42·5 |
| Average for all zones .. | 255·2 | 40·8 |

1. Taken from the Report of the Economist, pp. 42 and 43.
2. Taken from the Report of the Economist, p. 44.

The Extreme South-west zone, comprising the districts of Ramnad and Madura, has the lowest per capita and per family debt. The Carnatic, consisting of the districts of Nellore and parts of Chingleput and Guntur, has the highest per capita debt. High and low in per capita and per family debt do not tally except in the case of the 8th zone. The reason for this is obviously the difference in the average size of the family as between the regions. The northern delta region has a higher per capita debt than the Cauvery delta and the Deccan Districts have a higher figure than the Central Districts.

1,985 out of 8,530 families interrogated were free from debt, forming 23·3% of the total. Another 11·9% or 1,010 families had completely cleared their debts. The number of families in debt were thus only 5,527. Families which increased their debt were 1,169 or 13·7% of the total. Class III has the largest number of families free from debt, but the percentage they bear to the total number in the class is only 34·0. In Class I the number is 129 forming 50·0% of the total number, the highest percentage for all classes. The number of families which increased their debt just before the enquiry is highest in Class III and lowest in Class I. Detailed figures relating to these categories for all the classes are given in Table XXIII.

*Comparison with the Debt Position of* 1935 : Though it is not legitimate for reasons stated above to effect a comparison of the debt position in 1945 with that of 1939, a useful comparison may be made with the position as existed in 1935. Both estimates were based on data collected at the time, and though both are vitiated by a certain bias, the circumstances prevalent in both years were such as to make the bias almost identical. But to make the figures comparable certain alterations have to be made in them.

Mr. Sathianathan's estimate for 1935 too was vitiated by a few defects. The enquiry was conducted in a period of extreme depression when the burden of debt was being heavily felt, and so there must have been a tendency on the part of the agriculturists to exaggerate their financial plight. Secondly, the village investigated into were disproportionately distributed over the State and were not chosen on the basis of random sampling, but as typical or representative of the districts. Thirdly, the enquiry was conducted in the months of February, March and April and therefore did not include the petty loans entered in katha accounts and loans in kind. Fourthly, the investigators were all officials who admittedly cannot gain the confidence of the agricultural classes.

TABLE XXIII

*Number of families free from debt and with increased debt*

| Classes | Free from debt | Completely cleared debt | Total of 2 and 3 | Increased debt | Total number of families |
|---|---|---|---|---|---|
| (1) | (2) | (3) | (4) | (5) | (6) |
| I | 80 | 49 | 129 | 25 | 240 |
| Percentage to total number of families in the class. | 33·3 | 16·7 | 50·0 | 10·4 | — |
| II | 479 | 311 | 790 | 271 | 2097 |
| Percentage to total number of families in the class. | 22·9 | 14·8 | 37·7 | 12·9 | — |
| III | 851 | 435 | 1286 | 503 | 3784 |
| Percentage to total number of families in the class. | 22·5 | 11·5 | 34·0 | 13·3 | — |
| IV | 288 | 93 | 381 | 172 | 1130 |
| Percentage to total number of families in the class. | 25·5 | 8·2 | 33·7 | 15·2 | — |
| V | 287 | 139 | 426 | 198 | 1279 |
| Percentage to total number of families in the class. | 22·4 | 10·9 | 33·3 | 15·5 | — |
| Total for all classes. | 1985 | 1018 | 3003 | 1169 | 8530 |
| Percentage to total number of families. | 23·3 | 11·9 | 35·2 | 13·7 | — |

Apart from these defects and omissions of the 1935 enquiry, a major difference between the two estimates is that Mr. Sathianathan's estimate covered the whole population, both urban and rural, while the Economist's estimate applies only to the rural population. So it is necessary either to reduce the 1935 estimate so as to cover only the rural population, or increase the 1945 estimate to apply to the whole population. I have accordingly lowered the 1935 estimate to Rs. 173 or 174 crores. The per capita debt of 1935 multiplied by the rural population then existing will give only this figure. To this figure certain categories of debt omitted by Mr. Sathianathan have to be added. They have been roughly

estimated by the Economist at Rs. 25 crores. That would raise the total to Rs. 199 or Rs. 200 crores. Debt per capita, debt per family and debt per acre also relating to 1935 have to be raised correspondingly.

The only alterations to be made in the figures relating to 1945 are the reduction of the total debt to Rs. 175 crores for reasons already discussed and the consequent reduction in debt per acre.

The altered figures relating to the two years are tabulated below:

TABLE XXIV

| | | 1935<br>Rs. | 1945<br>Rs. |
|---|---|---|---|
| Total debt | .. | 200 crores | 175 crores |
| Debt per capita | .. | 48·3 „ | 40·8 „ |
| Debt per family | .. | 245·4 „ | 255·5 „ |
| Debt per acre of occupied land | .. | 85·0 „ | 43·2 „ |

Deductions which may be made from the table are:—

1. that total debt had got reduced by Rs. 25 crores by 1945;
2. that while debt per capita and debt per acre altered in the same direction as total debt, debt per family altered in the opposite direction; and
3. that the fall in debt per acre was larger than in per capita debt.

The explanation for the alteration of debt per family in the opposite direction has to be sought in the alteration in the average size of the family, from 5·08 in 1935 to 6·2 in 1945. Per family debt and per capita debt given by Mr. Sathianathan show that the average size of the family in 1935 was only 5·08.

The larger fall in debt per acre has to be attributed to the changed method of computation adopted in 1945 and the increase in occupied area from 32·8 million acres in 1935 to 40·5 million acres in 1945.

However the point that stands out in this comparison is that the incidence of debt fell between the two years. The per capita debt fell by 15% and this may be taken as the most accurate measure of the reduction. The absolute reduction in debt was by Rs. 25 crores, but if to this be added the Rs. 27 crores odd freshly incurred for the purchase of land during the war period, the reduction in

dead-weight debt may be placed roughly at Rs. 50 crores. No information is available as to what the subsisting debt is, productive or unproductive, secured or unsecured.

The causes of this reduction are not far to seek. Part of it may be legitimately attributed to legislative measures, such as, the Debt Conciliation Act of 1936 and the Agriculturists' Relief Act of 1938, and the expanded activity of the co-operative movement, and the other and larger part to the rise of agricultural prices and the increased prosperity experienced by certain sections of the agriculturists. The Agriculturists' Relief Act naturally did much more than the other enactment to scale down debt, and in the 94 months ending 31st March 1946 the amount thus scaled down was about Rs. 501 lakhs, forming 61% of the amounts involved in the applications made.[3] This however is not a complete measure of what the Act has done in the matter. It is generally admitted that this enactment has had the baneful effect of drying up the sources of credit in village areas, and so from the point of view of the magnitude of rural debt it has helped to keep it down by making fresh borrowing difficult. Compared with this, the achievement of the Debt Conciliation Boards, set up under the 1934 Act, was insignificant, for in the 5 year period, 1939-44, the total amount scaled down through the agency of the Boards was only Rs. 19·5 lakhs, forming a bare 3·7% of the amounts involved in the applications made.[4]

But the increase in the prices of agricultural produce and of agricultural land has had a greater effect. The food index shows that by September 1945 it had risen by 137·6% over the 1939 level, and agricultural prices in general had risen by 168·3% by about the same period. The rise in food prices recorded by the index is however not a true reflection of the state of affairs, for the food index is based on controlled prices and does not take account of prices in the black market which were considerably higher. Land values too had risen, acting as a great inducement for debtors to sell part of their land and liquidate their debts. According to the figures given by the Economist, the value of the sales of land during the period amounted to Rs. 4,68,697.[5] Whether this figure covers the whole State or applies to only 8,530 families interrogated is not stated.

*The Existing Burden of Debt:* While the figures so far examined clearly show that the burden of debt on the State as a

3. Rural Problems in Madras, p. 374.
4. Report of the Economist, p. 52.
5. Report, p. 110.

whole is less today than it was in 1935, they do not tell us anything about the actual way in which it presses on different sections of the community. In the paragraphs which follow such an examination is made.

In measuring the burden of debt the best criterion which may be adopted is the ratio that annual debt charges bear to annual income. In some of the past enquiries, certain other criteria were used, such as the value of assets or the ratio of total debt to income. Frederick Nicholson and Mr. Sathianathan tried to relate debt to value of assets and the Economist has related debt to income. Neither of these criteria will tell us anything about the ability of the debtor to comfortably meet the debt charges. Value of assets gives the guarantee to the creditor regarding the repayment of the debt, while the only consolation it gives to the debtor is that ultimately he could free himself from debt through a sale of property. The income criterion is superior, but what has to be related to it is not the total debt, as the Economist has done, but the annual charges. The income criterion comprehends also two others which are employed in connection with the measurement of burden, viz., the price of produce and the productiveness of the debt.

But neither a rise in the price of produce nor the productive employment of loans will reduce the burden of debt unless the income of the debtor is raised thereby. So when the income criterion is used these circumstances as well as any others which have the effect of raising income are covered.

All the data needed for the employment of this criterion are not however available. No information has been gathered by the Economist regarding the actual rates of interest charged or the division of debt into secured or long-term and unsecured or short-term debt. These two are serious lacunae in the analysis, for they prevent the accurate calculation of the burden. In the schedules prepared for the enquiry and the questionnaire issued to the investigators provision was made for the collection of these data, but the report is silent on the matter. In their absence we have to adopt the statutory rate of interest of 6¼% as actually charged on all loans and the proportion between secured and unsecured loans discovered in previous enquiries.

In calculating the burden, families free from debt have been excluded and the estimated debt has been redistributed among debtor families so as to discover the incidence of debt per family in debt. This has been done for all classes in all the ten zones. Full figures for these are given in the Report of the Economist.

The annual debt charges are then computed as follows. The subsisting or long-term debt is taken to be 55% of the total debt of the first three classes and 50% of the total for the last two. The higher percentage for the first three classes is justified on the ground that secured debt is almost entirely owed by them. A 15 year period is allowed for the repayment of this debt. This is arbitrarily determined, but taking all circumstances into account, this period will on the average be found sufficient for the comfortable repayment of this debt. The rate of interest applicable to both short-term and long-term debt is taken as 6¼%.

The annual debt charges will in each case be in accordance with the following formula; 6¼% interest on the whole debt *plus* the whole of the short-term debt *plus* 1/15 of the secured or long-term debt. In the formula provision is made for the full payment of short-term debt every year out of income for the reason that the income figures given by the Economist relate to gross and not net income.

The statement given below shows the annual debt charges per family in debt in relation to income for all the classes in the ten zones thus worked out.

TABLE XXV

*Annual debt charges in relation to Annual income per family in debt in the ten zones by classes*

(In Rupees)

| Zones | I Vizagapatam | | | II Circars Coastal | | |
|---|---|---|---|---|---|---|
| Class | Debt charges | Income | Percentage | Debt charges | Income | Percentage |
| I | 2397·7 | 3494·0 | 68·6 | 1411·0 | 5570·1 | 25·4 |
| II | 705·8 | 1491·5 | 47·3 | 541·0 | 1491·8 | 36·2 |
| III | 135·6 | 634·0 | 21·3 | 231·1 | 871·7 | 26·5 |
| IV | 109·2 | 612·7 | 17·8 | 121·9 | 800·4 | 15·2 |
| V | 32·5 | 382·2 | 8·5 | 44·8 | 351·2 | 12·7 |

| Zones | III Circars Upland | | | IV Deccan Districts | | |
|---|---|---|---|---|---|---|
| Class | Debt charges | Income | Percentage | Debt charges | Income | Percentage |
| I | 1877·0 | 5554·6 | 33·7 | 547·3 | 1412·2 | 38·7 |
| II | 235·9 | 1257·2 | 18·7 | 255·0 | 631·8 | 40·3 |
| III | 109·3 | 655·7 | 16·6 | 193·0 | 457·7 | 42·1 |
| IV | 127·8 | 737·5 | 17·3 | 183·8 | 470·6 | 39·0 |
| V | 37·3 | 286·0 | 13·0 | 30·8 | 587·4 | 5·2 |

TABLE XXV (CONTD.)

| Zones | V Carnatic | | | VI Cauvery Delta | | |
|---|---|---|---|---|---|---|
| Class | Debt charges | Income | Percentage | Debt charges | Income | Percentage |
| I | 416·4 | 3368·0 | 12·3 | 1051·6 | 4986·0 | 21·0 |
| II | 497·6 | 1545·0 | 32·2 | 359·3 | 1180·7 | 30·4 |
| III | 172·5 | 707·9 | 11·1 | 183·5 | 537·9 | 34·1 |
| IV | 88·1 | 539·0 | 16·3 | 71·2 | 464·1 | 15·3 |
| V | 49·3 | 332·6 | 14·8 | 47·4 | 412·7 | 11·4 |

| Zones | VII Central Districts | | | VIII Extreme South West | | |
|---|---|---|---|---|---|---|
| Class | Debt charges | Income | Percentage | Debt charges | Income | Percentage |
| I | 760·8 | 4324·8 | 17·5 | 122·5 | 2570·8 | 4·7 |
| II | 335·7 | 1559·3 | 21·5 | 136·6 | 1296·8 | 10·5 |
| III | 178·2 | 637·5 | 27·7 | 96·3 | 793·2 | 12·1 |
| IV | 160·9 | 590·1 | 27·2 | 88·8 | 999·2 | 8·8 |
| V | 42·7 | 424·1 | 10·1 | 41·1 | 902·9 | 4·5 |

| Zones | IX Extreme South East | | | X West Coast | | |
|---|---|---|---|---|---|---|
| Class | Debt charges | Income | Percentage | Debt charges | Income | Percentage |
| I | 1156·4 | 7177·8 | 16·1 | 1868·7 | 2049·5 | 91·1 |
| II | 407·2 | 1680·5 | 24·2 | 431·5 | 1288·8 | 33·4 |
| III | 198·3 | 807·7 | 24·5 | 213·7 | 838·0 | 25·5 |
| IV | 112·9 | 786·8 | 14·3 | 150·5 | 766·4 | 19·6 |
| V | 24·0 | 698·4 | 3·4 | 23·8 | 589·7 | 4·0 |

Average for all the ten zones

| Class | Debt charges | Income | Percentage |
|---|---|---|---|
| I | 1072·5 | 4332·1 | 24·7 |
| II | 306·0 | 1339·6 | 22·8 |
| III | 157·0 | 687·5 | 22·8 |
| IV | 106·0 | 686·1 | 15·4 |
| V | 32·4 | 477·7 | 6·7 |

Wide variation is seen in the percentage figures worked out above. While for Class V (landless labourers) in the Extreme South-East it is as low as 3·4, for Class I (big land-holders) on the West Coast it is as high as 91·1. Class I taken by itself shows the widest variation, 4·7 to 91·1, and Class V, the narrowest, 3·4 to 14·8. On the face value of these percentage figures the lowest burden of debt appears to be on Class V and the highest burden on Class I. It is only 6·7 for Class V for the State as a whole and 24·7 for Class I. But when these percentages are related to the margin available out of income, after meeting necessary expenditure, a different tale is told. From the analysis of 150 family budgets conducted by the Economist it is seen that Class I has a net margin of nearly 27·5% of gross income after meeting cultivation and living expenses, while Class V has a deficit. Under cultivation expenses part of the debt charges also will figure. When both these circumstances are considered it will be seen that the burden of Class I is light and well within their financial capacity to meet comfortably. But Class I land-holders on the West Coast and in Vizagapatam are exceptional cases.

Small holders with acreages below 5 acres have relatively higher burdens than other landholders. The percentage relation of debt charges to income is the same in their case as in the case of medium landholders, yet their income is only half of that of the latter class and their net margin is a minus figure. Class II, on the other hand, has a net income of 9·3% of gross income. The percentage figures reveal that tenants are better off than small holders, since out of an equal income they have to pay only 15·4% towards the debt, as against 22·8% for the other class. But the deficit in their case after meeting total expenses is greater than in the case of the small holder. If this also is taken into account, the tenants will be found to be worse off. Both classes however will find it extremely difficult to meet annual charges. Comparing the three classes, small holders, tenants and landless labourers, the burden appears to be lighter on the last class.

Among the zones the debt is seen to press more heavily in the Deccan Districts, in Vizagapatam and on the West Coast. The burden is uniformly high in the Deccan Districts for all classes, except the labourers. The percentage figures for Classes III and IV are the highest for the State. The reason for it is lowness of income rather than the large magnitude of debt. Vizagapatam has heavier indebtedness for Classes I and II. On the West Coast the debt is inordinately heavy on the big land-holders, the highest in the State, but very light on landless labourers.

In the other extreme is the Extreme South-West zone comprising the districts of Madura and Ramnad. Debt is uniformly low here for all classes, the big landholders being specially favoured The burden in their case is as low as 4·7% of gross income. Income too is higher for tenants and landless labourers here which still further reduces the burden of an already low debt.

In the delta regions of the Cauvery and the Circars medium and small landholders and landless labourers have heavier burdens than other classes, and in the Circars Upland and in the Carnatic landless labourers are worse off than other classes. In the Central Districts small holders and tenants and in the Extreme South-East zone medium and small holders suffer most.

The foregoing analysis shows that big landlords as a class do not require relief through legislative measures, as long as high agricultural prices prevail and their incomes are maintained high. Nearly 50% of them are free from debt and on the remainder the burden is light. The West Coast and Vizagapatam are exceptional cases, but indebted landlords of Class I there form only 8% of the total of such indebted landlords in the State, and so their special circumstances cannot be made the basis of general legislation. On the West Coast 75% of Class I landlords and in Vizagapatam 85% are in debt. But most of them hold such large estates that through sale of a portion of their estates they can easily secure freedom from debt.

The other four classes of debtors require help, for in spite of higher income accruing to them at present, the last three are faced with deficits in their budgets. Class II landholders have a small margin in income with which to meet their obligations, and with judicious management can hope to clear their debt. They require time to do it, and so an arrangement by which the burden of debt is spread over a number of years will meet their case. A third of them are free from debt, and for the remaining two-thirds, if some agency is devised, Governmental or institutional, to take over the debt for gradual liquidation, they would receive all the help they need.

The small holders would need relief on a more generous scale, since their incomes are just sufficient to meet necessary expenditure. There is a deficit in their budget, but it is of insignificant amount. If their debt can be reduced to half its present dimensions it will be brought within their capacity for repayment, for then the debt will be only such as will figure under cost of cultivation.

The last two classes too, viz, tenants and landless labourers, need relief as urgently as the small holders, for they have large deficits in their budgets. The percentage of families in debt in these two classes is almost the same as for small holders. Special legislative provision is therefore needed to give relief to these. In 1938 when the Agriculturists' Relief Act was passed, separate legislation to deal with these was promised in the legislature, but that promise remains as yet unfulfilled. Instead, the amendment to the Act of 1938 contemplates an extension of relief to new categories of landholders.

*The Madras Debt Conciliation Act*, 1936 : The Act was passed as a solution for the acute state of agricultural indebtedness and was designed to provide machinery for effecting a voluntary and amicable settlement of debt, by bringing debtors and creditors together and letting them see each other's difficulties. It was believed that in view of the utter impossibility of the debtors in general to meet their full obligations, the creditors would be willing, in their own interests, to reduce the debts and bring them to manageable dimensions. Under the enactment, power was taken by the Government to constitute Debt Conciliation Boards to which applications could be made by debtors or creditors for amicable settlement. The Act was made applicable to all debtors whose debts exceeded Rs. 100. A few principles were laid down with regard to conciliation. Following the rule of *Danduput*, no creditor was to be allowed a sum in satisfaction in respect of principal and interest which would be greater than twice the principal originally lent. In the case of debts incurred before 1st June, 1933, this sum was not to exceed twice the amount due on that date. A settlement could be effected if the creditors to whom more than 50% of the debt was owed were willing to do so, and when one was made it was recorded by the Board and thereafter had the same effect as a decree of the Civil Court and could be executed as such. If the creditors failed to come to an agreement or the applicant refused to diligently pursue the matter, the application could be dismissed. But power was vested in the Board to issue a Certificate to the debtor, if after his having made a reasonable offer the creditor or creditors proved recalcitrant and refused conciliation. The possession of such a Certificate by a debtor removed his liability to pay costs of any civil suit brought against him by the creditor in respect of the debt, and limited the interest payable on the debt to 6% simple interest per annum from the date of the certificate.

In accordance with these provisions Boards were set up in various localities of the State and debtors invited to make applica-

tions. But the number of suits filed between 1939 and 1944 were only 24,464, involving the amount of Rs. 527 lakhs. Creditors in most cases proved to be recalcitrant, and conciliation could be effected in only a few cases. One defect of the machinery as set up and revealed by its working was that there was no agency to expedite the payment of the scaled down debt. This factor stood in the way of creditors considering offers made. The suggestion has been since made that the Land Mortgage Banks should be used for the purpose of liquidating the scaled down debt, and for facilitating it a closer *laison* should be established between the Conciliation Board and the Bank.

This Act was soon swamped by the more positive legislation contained in the Agriculturists' Relief Act, and though even after the passing of this measure conciliation boards continued to be set up, little success attended their activities.

*The Madras Agriculturists' Relief Act*, 1938: The failure of voluntary conciliation and the acuteness of the problem of rural debt were the justification for the passing of this enactment. The principle embodied in it was compulsory scaling down, with a view to bringing down the debt in each individual case to what was just and proper and consistent with the reduced capacity of the debtors to repay. For this purpose existing debts were classified into two categories, debts incurred before 1932 and those incurred on or after that date. In the case of the first category all accumulated interest upto 1st October, 1937 was cancelled. Only the principal, or part of it as remained unpaid, was made repayable. In determining the debt to be repaid, the rule of *dandupat* was to be observed, and it was laid down that if the debtor had already paid twice the amount originally borrowed by way of interest or part payment of principal, the debt would remain fully cancelled. In cases where the payments already made did not come to twice the principal, only that amount which would bring the total payments to twice the principal or such portion of the principal which was outstanding, whichever was less, was to be paid. In determining the principal, only the original amount lent, notwithstanding any renewal of the bond for a higher sum, was to be accepted as principal.

In case of debts belonging to the second category, the principal outstanding had to be paid, but the allowable interest was reduced to 5% simple interest per annum. All payments already made towards interest in excess of this percentage were to be credited towards principal, and only the balance of principal thus calculated was to be payable. All court decrees pending execution were to be thus scaled down, and even in cases where sale or foreclosure

had taken place on or after 1st October, 1937, the decree holder was required to refund to the debtor any sum received by him in excess of the sum he would have been entitled to, if the property had not been sold.

In addition to the clauses dealing with the scaling down of debt, there were a few other clauses too, pertaining to the maximum rate of interest chargeable and the cancellation of arrears of rent in Zamindari and Janmi areas. The maximum rate of interest was fixed at 6¼% simple interest per annum on all debts incurred by agriculturists after the coming into force of this Act. Arrears of rent payable to landlords pertaining to fasli 1345 and earlier faslis were to be considered discharged, if the rent for fasli 1347 was paid on or before 30th September 1939. Where only portions of the rent payable for faslis 1346 and 1347 were paid, the cancellation of arrears of earlier rents was to be effected only in the same proportion. All payments made by tenants towards rent were to be credited to the rent of fasli 1347, and after this had been completely discharged, to the rent of fasli 1346.

Though much was expected of this Act, as the actual figures relating to debt scaled down show, much did not materialize. Barely Rs. 5 crores were scaled down under the provisions of the Act. The applications made were few, and this fact goes to show how poor indebted agriculturists are still in the stranglehold of the creditors and are not in a position to take advantage of any legislative protection afforded them. No information is available as to the amounts cancelled under the clauses relating to rents or to the actual rates charged on agricultural loans. Nominally the bonds may carry this statutory rate of interest, but the actual rates paid and received may be higher.

While the positive results accruing from this legislation have been disappointing, it is generally understood to have had the baneful effect of drying up the sources of credit and diverting ordinary agricultural funds to other channels of investment. Quantitative estimates of these are in the nature of the case impossible to make, and so only a qualitative statement of it is possible. However it goes without saying that legislation alone can never be relied upon to eradicate the problem of debt or put the rural credit system on an improved basis.

## Chapter XIII

# EXISTING CREDIT AGENCIES

The agricultural credit organization existing in the State consists of the village moneylenders, indigeonus bankers, commercial banks, such as, the Indian Joint Stock banks, the Exchange Banks and the Imperial Bank, the Reserve Bank of India, nidhis and chit funds, Governmental agencies and the co-operative credit structure. As it exists to-day it is disjointed and chaotic and is ill fitted to efficiently play the role for which it is designed. Admittedly provision of agricultural credit under any circumstances is difficult, and in most countries, including such highly developed countries as the United Kingdom and the United States, this branch of the credit structure is the weakest and the least satisfactory. It is no wonder then that in India with an illiterate and poverty-ridden peasantry, the credit system should be primitive and unregulated. Availability of credit at remunerative rates directly varies with credit worthiness, and the efficiency of the credit organization usually reflects the standard attained in productive organization. The weakness of Indian agriculture in both these respects is doubtless the cause of the deplorable state of rural credit.

Of the agencies in existence the village moneylender is by far the most important. He is ubiquitous and is easy of access and absorbs nearly 90% of the business. The second place is held by co-operative institutions which have been growing in number and in usefulness. The part played by the others is almost negligible.

In this chapter all agencies except the co-operative societies are described and analysed, and in the next chapter under the head of Agricultural Co-operation the co-operative institutions will be dealt with.

*Village Moneylenders* : No information is available in Madras regarding the number of moneylenders operating in the rural areas of the State. An attempt was made in 1930 by the Provincial Banking Enquiry Committee to make an estimate of their number at the instance of the Central Committee, but that attempt was not attended with as much success in this State as in certain others. Even if the figure for 1930 were known it would be of little use now after a lapse of nearly 18 years. The difficulty of estimation is due to the fact that these moneylenders fall into various categories and are both professional and non-professional. The pro-

fessional moneylenders abound in urban areas and are there easily distinguishable from other dealers of credit, but in village parts while they are not non-existent, it is the non-professional lenders of money who are numerically stronger. Mr. W. R. S. Sathianathan in 1935 found that the proportion of agricultural moneylenders to the professionals was 7 to 1. The non-professional lenders may be agriculturists, traders or artisans, and carry on this profession as a side activity to their main avocation. It is a little difficult however to say which is the main activity and which the side activity, for in quite a number of cases moneylending is found to be far more remunerative and yielding a higher percentage of the total income of the men concerned than the so-called main activity. This part-time nature of their work and their general disinclination to reveal the state of their moneylending activity prevent an accurate determination of their number.

Well-to-do landlords in this State too, as in most parts of the world, advance money to their tenants, viewing their action more as the discharge of their responsibility as landlords than as moneylenders. In their relationship to others the moneylender complexion is however more prominent. But in both cases, the methods followed and the rates charged are identical, which makes it immaterial to the borrower whether his creditor is his own landlord or an outside financeer. Those methods are more or less similar to the methods adopted by the professional moneylenders, with perhaps the difference, as has been observed by the Central Banking Enquiry Committee,[1] of lower rates of interest and easier collection. Often the agriculturist moneylender is more exacting than his professional counterpart and has the ulterior aim of appropriating the borrower's land in lieu of the loan. They usually lend seed against future crops and cash against the security of land.

Merchants and traders indulge in moneylending, partly in furtherance of their trade and partly to seek employment or investment for their surplus funds. Often the understanding is that the crop, on the security of which loans are given, will be sold through them. The terms offered by them are found to be easier, as they hope to make up the loss in the lower price they invariably pay for the crop sold to them.

In addition to these, there are also others, such as pensioners, artisans, widows, etc., who lend their surplus funds and live solely on the income derived thereby, or supplement their other incomes through this channel. These ordinarily lend money only to those

1. Report, pp. 75-76.

whom they know well and on good security, such as land or ornaments.

The professional moneylenders who however do not appear to be very numerous in the rural areas of this State, follow moneylending as their main business and are therefore readier to give accommodation and undertake greater risks. They rely in the main on the gains of moneylending and consequently charge higher rates and accept doubtful security. They are not so eager for repayment of the loaned funds as the non-professionals are, for in their case repayment involves the search after a fresh borrower and the grant of a fresh loan. They give loans on mutual trust without a document or even a witness, on book entries with merely the thumb impression of the borrower and when the loans are large or when renewal of an old loan takes place, on promissory notes. Loans on mortgage of land, houses or ornaments and even occasionally on cattle, are also given. Loans for cultivation purposes given on personal security often carry with them the understanding that the crop will be sold to them or through them, for many of the professional moneylenders too engage in trade as a side activity.

Neither the professional or the non-professional moneylender is interested in the purpose of the loan, nor cares how the amount borrowed is spent. His concern is only with the security offered and the ability of the borrower to repay, and as long as these are satisfactory, he is prepared to lend to the limit of his capacity. His unconcern with purpose prevents him from drawing the necessary distinction between short-term and long-term loans or attaching different types of security to these two. All loans taken start as short-term loans and later get converted into mortgage loans on renewal or when unpaid interest is added to the principal. The ruling rates of interest used to be high, ranging from 9 to 12% on mortgage loans and rising to 24 and 36% on unsecured loans and to 50 and 100% on grain loans. Compound interest was the rule, interest being added to principal as interest rests. Since 1938 however, after the passing of the Agriculturists' Relief Act, the limit of 6¼% (S. I.) has been imposed on loans to agriculturists which, though nominally has restricted the rates charged, has not in reality improved matters. Through collusion between lender and borrower a prior deduction from the principal lent is made, which virtually makes the rate charged higher than its face value, or a bond is taken for a larger sum than is actually disbursed. The helplessness of the villagers and their utter dependence on the willingness of the creditors to lend, lacking alternative sources, compel acquiescence on their part in such proceeding. A large part of the

high rate charged is an insurance against risk, which the speculative business conducted with the dishonest borrowers compels the lender to spread on honest borrowers too. The usurious rate charged makes the investment of such funds in agriculture unprofitable.

Periods of repayment, as also periods of payment of interest, are usually fixed at the time the loans are given, but rarely does the debtor pay within the stipulated time. His failure to effect payment is invariably the occasion for the renewal of the loan and the taking of a fresh bond from him for a higher sum, in which the old principal, unpaid interest and even penal interest are all incorporated. This process is repeated every time there is failure to pay, and the debt originally a small sum, in course of time swells to many times the initial sum. While in most cases non-payment of interest or any part of the principal is the real reason behind the growing volume of rural debt and the perpetual indebtedness of the agriculturists, the vicious moneylending system and the malpractices indulged in by the moneylenders also contribute to aggravate the position. Not infrequently payments made are not properly credited towards their accounts with the moneylenders, nor receipts issued for them. The Madras Debtors Protection Act of 1935 sought to remedy this state of affairs, making it obligatory for the creditors to keep proper accounts and to render such accounts to the debtors when asked for by them. But the lack of an inspectorate to check these accounts and the timidity of the debtors to assert their rights in the matter have virtually made this piece of legislation a dead letter.

Prior deduction of interest from the principal lent, illegal levies, such as contributions to pinjrapoles, shrines, temples, charities, etc., and for opening the purse and doing business, falsification of accounts, fabrication of documents, the taking of signatures or thumb impression on blank paper in which the text of the bond is written later at leisure, and the imposition of onerous conditions, such as the sale of produce to the creditors or through them at low prices, are some of the other malpractices commonly indulged in by moneylenders. These malpractices obtain to a greater extent among the professionals than among the non-professional ones.

In spite of all these defects of the moneylending system, the village moneylender continues to be the most popular credit agency in rural areas. Easy access, ready accommodation, absence of unwelcome scrutiny, non-insistence on punctual repayment, valuation of credit worthiness on intangible assets and a mutual under-

standing of problems and difficulties are the characteristics of the system which still appeal even to the wary among the cultivators. The stranglehold which the creditors have on some of the debtors prevents any attempt at disloyalty or diversion of custom, but coercion of circumstances apart, the ryots would more freely and voluntarily go to the moneylenders than to other agencies from age-long habit and custom and from a recognition of their ready helpfulness and understanding sympathy. The credit granted by the moneylenders is facile and personal, unbound by any red-tape and has the great merit of being extremely elastic. Residence on the spot and intimate acquaintance with the financial and other circumstances of the clientele enable them to take risks which other agencies cannot and would not, and yet safeguard themselves against inordinate and shattering losses. Viewed against their usefulness and the services they render, their lapses look small, and the high payments they demand appear to be only legitimate and deserved remuneration for the risky business they conduct.

But the very facility with which credit can be got and the elasticity of the system, which from some points of view is a desideratum, offer irresistible temptation to the agriculturists to indulge in uneconomic and unproductive borrowing and develop the habit of procrastinating the day of reckoning. For the poor and the needy the quagmire of facile credit is the high road to social and economic ruin. It may be unkind and perhaps unjustifiable to say that consciously and deliberately the moneylenders are pursuing the exploitation and final ruin of their clientele, but, without a doubt, the prevailing system, of which the lenders and borrowers are equally unconscious and perhaps unwilling elements, directly leads to that result.

The financial resources of these moneylenders are almost entirely made up of their own funds, with consequent limits to the lending activity which they may indulge in. Some of them occasionally borrow from the urban shroffs and indigenous bankers, and those of them who belong to the marwari community, obtain funds from their headquarters in Rajputana at low rates of interest. No estimate is, in the circumstances, possible of the amount of other funds annually made available to them, but the general opinion of those who have some intimate knowledge of their activities, seems to be that it represents an insignificant percentage. As a rule they do not invite deposits locally, which fact distinguishes moneylenders as such from indigenous bankers. In course of time, however, their own funds are bound to swell, partly through the addition of interest earned and partly also through the incursion of

urban savings into the rural moneylending business. Among the non-professional lenders are to be found quite a number of urban folk, traders, professional men, Government employees, artisans, etc., who occasionally advance their savings to agriculturists on the mortgage of land. Even so the funds at their disposal are inadequate to meet the needs of cultivation. This is particularly seen in the high rates of interest which prevailed before legislative limitation, and the low scale of capital investment in agricultural production.

The isolation in which each moneylender carries on his business, thrown entirely on his own resources, with little prospect of supplementing them through outside borrowing, militates against any centralization or concentration of rural funds, with a view to minimizing the risks involved or maximizing their service and usefulness. Lack of any inter-relation between moneylenders or of any machinery for co-ordinating their activities with other credit agencies, leaves uncorrected the unequal distribution of available funds as between localities, and gives rise to a situation, where great scarcity in finance in some localities is accompanied by comparative plenty in others. This, together with the practice of lending money instead of credit which characterizes all moneylender finance, prevents any stretching of available resources to the maximum extent.

The volume of rural credit business passing through the hands of the moneylenders cannot be accurately assessed now, as no data are available regarding it. It is unfortunate that the Economist who conducted the enquiry into rural indebtedness, did not include these data in his scheme of collection, though there was every facility for doing so. Nor did he try to find out the number of moneylenders, professional and non-professional, engaged in the business in the villages included in his survey. Mr. W. R. S. Sathianathan's survey in 1935, however, covered both these points, and in this respect was therefore fuller. He found that 93% of the loans, during the year, were taken from moneylenders, indigenous bankers, joint stock banks, etc., 6% from Co-operative institutions and 1% from the Government. Since the business conducted by indigenous bankers and joint stock banks is almost negligible, it would not be far wrong to credit the moneylenders with 92% of the business. At the present time this percentage is slightly less, perhaps, as a result of debt relief legislation and the expansion of the activities of Co-operative Societies and the Government as credit agencies.

There can therefore be no doubt that moneylenders at present play the most dominant role in the provision of rural credit,

and will continue to occupy that pre-eminent position for quite a long time yet. Supplanting them by institutional credit agencies is only a remote possibility. Four decades of Co-operative endeavour has hardly assailed their position and is not likely to do so in the near future, unless through education and propaganda an altogether new attitude towards the Co-operative movement is engendered in rural folk. Never-the-less it may be possible to mend their ways and give some protection to borrowers from their rapacity.

The manner in which such protection may be given is through legislative regulation of their activities and the restriction of the terms of lending. Such legislation has been passed periodically, and at the present time, there are four enactments in existence relating to the matter, viz., (1) The Usurious Loans Act of 1918 as amended by the Madras Amendment Act of 1936, (2) The Madras Debtors' Protection Act of 1935, supplemented by the Madras Act IV of 1936. (3) The Madras Debt Conciliation Act of 1936 and (4) The Madras Agriculturists Relief Act of 1938.

The Madras Amendment Act of 1936 which amended the All-India Usurious Loans Act of 1918, made it obligatory for the courts to revise rates of interest when they appeared to be excessive in all cases brought to their notice, and thus eliminated a major defect in the working of the original Act. Still this piece of legislation gave actual relief only to a minority of debtors who had the temerity to force matters to a court of law, and excluded from its purview the large body of silent sufferers among the borrowers. Since the passing of other legislation, the usefulness of this measure has been greatly reduced and the determination of the permissible rate of interest has been taken out of the hands of courts of law.

The Madras Debtors Protection Act of 1935, supplemented by the Madras Act IV of 1936, was intended to give protection to small debtors who had borrowed sums below Rs. 500. Protection was sought to be given through fixing a maximum rate of interest and making it obligatory for the creditors to maintain a proper system of accounts and make those accounts available for the inspection of the borrowers whenever demanded by them. The Madras Act IV of 1936 fixed the maximum rates at 9% simple interest for secured loans and 15% simple interest for unsecured loans. These two enactments at present remain non-effective, for the provisions relating to the rate of interest have been superseded by later legislation and the penal clauses pertaining to non-compliance with the maintenance of proper accounts are found to be

insufficiently stringent and hardly invoked by the debtors in their aid.

The Madras Debt Conciliation Act purported to scale down pre-existing debt through the employment of the method of conciliation, but did not deal with the question of moneylending or try to regulate the terms of lending.

The Madras Agriculturists' Relief Act of 1938 too had as its main purpose the scaling down of debt, but, from the point of view of regulation of moneylending, contained the important clause limiting the chargeable rate of interest on loans to agriculturists to 6¼% simple interest. This has superseded all previous enactments on the matter and nominally placed an absolute limit on the rate of interest payable. But moneylenders have, as already adverted to, discovered ways of circumventing this restriction. This enactment is reported to have had the baneful effect of curtailing rural credit, which, in the absence of alternative sources, has really hindered agricultural activity.

What legislation may do in the matter of limiting the rate of interest has already been done, any further step in that direction necessarily taking the form of a lowering of the rate, without introducing any new principle into it. But other malpractices referred to above await proper control. Legislation may do the needful here too, as has been shown in the Punjab, in Bihar and Central Provinces where Land Alienation Acts, Regulation of Accounts Act and acts for registration and licensing of moneylenders have been passed. There is a proved need in the State for a Land Alienation Act and a Regulation of Accounts Act on the model of the Punjab enactments, but whether registration and licensing of moneylenders, compulsory or optional, also should be introduced is a matter on which opinion seems to be divided. The Reserve Bank of India is in favour of it, while the Central Banking Enquiry Committee, after a review of the recommendations of the Provincial Committees, expressed themselves against the suggestion for reasons which they have discussed in detail in their Report.[2]

No case can be made out for optional registration, for it is neither here nor there, and cannot be expected to serve the purpose for which it is meant. If licensing is to be introduced, it should be on a compulsory basis, and it is its feasibility and desirability that have to be examined.

2. Report pp. 87-90; Statutory Report of the Reserve Bank, 1937, p. 11.

Compulsory licensing may certainly be made administratively possible. Through the prescription of stringent penalities for non-compliance and a legal invalidation of bonds, promissory notes and mortgage deeds made out in favour of unlicensed lenders, all those who wish to continue in the business may be virtually compelled to register themselves. The legal invalidation of bonds, etc., would appear to be necessary to make unlicensed moneylending too risky a business to the large body of prospective law breakers. Without it the penal clauses, invoked only in the few cases forced to courts of law, will be found insufficiently deterrant.

But the desirability of licensing really turns on its possible and probable economic effects. If professional lenders were alone in the field, things would have been fairly easy, but the existence of a large body of non-professionals, more numerous in this State than in certain other parts of India and doing business comparable in magnitude to the business of the professionals, is a complicating circumstance. Only such of them whose lending business is large will be willing to take out licences. Others, such as urban folk who occasionally lend when special opportunities offer and agriculturist and trader lenders who carry on this business as a side activity, would be chary of openly proclaiming themselves as moneylenders. Their exclusion from the field would practically amount to the denial of the funds they represent to the agricultural industry, which even in existing circumstances suffers from a paucity of funds. There is doubtless the possibility that in the new circumstances those funds will go to swell the resources of co-operative societies and professional moneylenders and thus indirectly be available to agriculture. But the absence of any facility for direct lending to agriculturists, which to rural folk has certain advantages, will open out the field for competition between agriculture on the one hand and trade and industry on the other, in which the former hardly has a chance of emerging successful. There is therefore the high probability that licensing will have the net effect of reducing the flow of credit to agriculture.

The withdrawal of the non-professional from the field will remove the now existing personal touch from the business. Still it need not always be deplored, for some of them, as we have seen, are more exacting than professional moneylenders and have invariably the ulterior aim of appropriating the debtor's land. But it would be a pity, if the landlord moneylenders too are eliminated in the process. They very often lend money or grain to their tenants more in discharge of their obligations as landlords than as outside financiers. This practice obtains all the world over and

is admittedly the mainstay of small tenant farmers. However it may be possible and will be found quite justifiable to permit such lending without registration within the scheme of licensing, provided the limitations on the rate of interest and on the other terms of lending are made applicable.

Apart from the aforesaid danger of the source of credit practically drying up, another danger likely to supervene on the withdrawal of the non-professionals is the immediate foreclosure of the loans due for repayment at the time of inauguration of licensing. Renewal of these loans will not be granted by the creditors for obvious reasons. A bond or a deed executed prior to the date of the new legislation will always secure immunity, but not one executed after that date. The net result will be that a large number of debts will come up for immediate payment at the time licensing is enforced and cause untold hardship to the debtors. This will happen at a time when fresh borrowing will be more difficult. To tide over this difficulty some transitory provision will have to be made in the Act itself, giving immunity to the bonds, notes, deeds, etc. executed within 3 or 6 months of the enforcement of the Act, or sufficient time should be allowed to pass between the passing of the Act and its enforcement to enable the creditors to renew the loans before the date of enforcement.

The difficulty can be avoided if invalidation of unlicensed documents is not resorted to, but then evasion also will be easier. In Bengal, the Punjab, Bihar and the United Provinces where licensing is enforced by acts of the legislature,[3] the assistance of courts is denied to the unlicensed moneylenders in enforcing their claims. In the Central Province there is only a fine prescribed as penalty. To what extent credit has dried up in these States or the evil of foreclosure has prevailed is not known. A detailed enquiry only will give a true picture.

In spite of the adverse economic effects discussed above and the findings of the Central Banking Enquiry Committee, the case for licensing of moneylenders receives support from the successful introduction of such a measure in the other States adverted to already. But lack of identity or similarity in material circumstances has to be noted. The wider prevalence of the landlord tenure in Bengal, Bihar, large areas of the United Provinces and

3. Money Lender Act, 1933, in Bengal; Registration of Money Lenders Act, 1938, in the Punjab; Money Lenders' Act, 1938, in Bihar; Money Lenders' Act, 1934, in Central Province; and Regulation of Sales Act and Agriculturists Relief Act, 1934, in the United Provinces.

the Central Provinces is a circumstance which favours evasion of the law without invoking its terrible consequences. The landlord lender is likely to predominate in these States, and, though unlicensed, can enforce his claims without resort to the courts. As the United Provinces Banking Committee have stated,[4] the landlord creditor has a double hold on the debtors and can easily credit whatever payments are made by the tenant debtors towards the loans, and keep rents payable in arrears for which he can sue them in a revenue court. In the Punjab which happens to be the only State with a licensing scheme which has not a wide prevalence of the landlord tenure, the strength of the co-operative movement is perhaps the extenuating circumstance.

In view of all this, the decision regarding licensing should be taken only after due deliberation and only from a conviction that it is definitely going to improve the moneylending system. If what is expected of the scheme of licensing can be equally well secured from other pieces of legislation, as the Central Banking Committee have stated, there can be no justification for invoking the difficulties inherent in such a scheme. So far there is little evidence to show that licensing will so improve matters as to give valuable additional protection to debtors.

Other suggestions made to improve the moneylending system amount to an elimination of the individual moneylender and his absorption in the co-operative movement. The latest of these suggestions is the one made by the Economist who conducted the investigation into Rural Indebtedness in Madras in 1945. Briefly, his proposal is to compel all moneylenders in a locality to join the co-operative society and form a separate moneylenders' branch of the society. All lending by moneylenders will thereafter be through this branch and the society will put its stamp of approval on all transactions. But negotiating for loans will still be between individual borrowers and lenders, but when they are completed, the society has to be notified with full details as to terms. The society will give publicity to all the information received, in order to invite competition from other lenders. The disbursement of the loan to the borrower will be through the society, for effecting which, the lenders have to maintain running accounts with the society. Thus borrowers and lenders are given the freedom to choose their creditors or debtors, while the competition between moneylenders, ensured under the scheme, is expected to make the

4. Quoted in the Report of the Central Banking Enquiry Committee Report, p. 76.

terms of loans more favourable to the borrower. The society's supervision will effectively prevent usury and other malpractices usually indulged in by moneylenders.

This proposal is not identical with two others, made by the Central Banking Enquiry Committee, that moneylenders should be induced to join co-operative societies as ordinary members and deposit their funds with the society, or that they should be persuaded to form co-operative societies of their own to function as financing banks to primary societies. In both these proposals the moneylender will lose his identity. But in the new proposal his individuality is sought to be retained, but his transactions will be given publicity and be under the supervision of the society. To prevent clandestine dealings outside the society the suggestion is made that promissory notes and other documents of credit, not bearing the endorsement of the society, should be made invalid in law.

The compulsion exercised on moneylenders to become members of societies and transact their business through such societies and the legal invalidation of private documents of credit may effectively prevent private lending and guarantee fair terms to borrowers. But the defects of the plan are, first, that there is nothing in it to prevent diversion of moneylender finance to other investments and thus ensure an adequate flow to agriculture, and secondly, the differential terms on which the moneylender loans and society loans will be granted may tend to create an impression, fatal to the popularity and good work of the society, that discriminative practices are indulged in by the society. There may also be the danger that instead of the society improving moneylender transactions, moneylenders may get control of the society and use it to further their own interests. While admittedly it will be an advantage to secure for the society the ability and experience of the moneylenders in its management, the domination of the society by them will be detrimental to the long-range interest of the society. It is one thing for the moneylenders to deposit their funds with the society as other members do and thus strengthen the finances of the society, quite another to be given the privileged position of negotiating their own loans on their own terms under the aegis of the society. The control that the society may exercise over such loans may, if effective, be beneficial to the borrowers, but it is just that which will induce the moneylenders to get control of the society. As things are, village societies are such weak organs that they will be found ill-fitted to carry out efficiently this particular function, or resist the overwhelming power which moneylenders can bring to bear on them.

The monopoly power and influence of the moneylender can be curbed only in course of time, and in that process, legislative restrictions on their malpractices, competition offered by co-operative and other banking institutions and finally a greater awareness of their true interests on the part of the borrowers themselves, must all play their part. Immediately, in addition to the legislative measures already passed, those other measures, suggested above, may go some way to put the village moneylending system on an improved basis.

*Indigenous Bankers* : Following the criterion adopted by the Punjab Banking Enquiry Committee, the indigenous banker may be distinguished from the moneylender as one who practises banking as his primary business, finances trade and industry rather than consumption, advances money more often with than without security and insists on punctual repayment. As a rule he receives deposits, though there are some classes of bankers who do not and some moneylenders who do, and deals in inland bills called 'Hundis'.

In this State these bankers are drawn from four communities viz., Nattukottai Chettiyars, Multanis, Marwaris and Kalladakurichi Brahmins. Multanis and Marwaris are spread through out the State, while the other two are confined in their operations to the Tamil districts. The Nattukottai Chettiyars have invested large funds in banking and other business in Burma, Malaya, Ceylon, Indo-China, etc., and have become quite famous as efficient bankers. These bankers on the whole are more business like in their methods and charge lower rates of interest. Their main business as bankers is the provision of credit to trade and small industry. Occasionally the bigger ryots or landlords may take loans from them on the mortgage of land, and village moneylenders too may get accommodation from them during times of stringency. In the movement of produce from the villages to urban centres and then onward to the ports or consuming centres, they play an important role, but there their dealings are with middlemen engaged in the business and rarely with agriculturists. The middlemen concerned may use the accommodation secured from them for advances to cultivators, and thus establish an indirect link between them and the agriculturists. At times, however, when the demand for accommodation from trade and industry falls off, these bankers may try to seek an outlet for their surplus funds in agriculture, and in furtherance of that object send their agents to village parts to make advances to cultivators. In magnitude the credit provided by them

for agriculture is neither large nor steady, and so as a rural credit agency they play only a minor role.

*Indian Joint Stock Banks and Exchange Banks*: If the help given by indigenous bankers to agriculture is little, the Indian Joint Stock Banks and the Exchange Banks operating in the State give even less aid. The Indian Joint Stock Banks have their offices in urban areas and find full employment for their meagre funds in the finance of trade and industry. Occasionally the bigger landholders may take loans from them on the security of ornaments or the mortgage of land, and even on pronotes with or without joint security, at rates of interest ranging from 9 to 10%, but there appears to be a positive aversion on the part of these banks to accept such an illiquid asset as land as security. Agricultural business is unpopular with them for various reasons. In the first place, they lack the expert knowledge required for an accurate assessment of the value of securities which the agriculturists can offer viz., land and standing crops. Secondly, such business appears to them to be too risky, dependent as agriculture is on natural factors to a greater extent than trade or industry. And thirdly, the usual period of about 10 to 12 months for which agriculturists require even short term loans is considered inordinately long from the point of view of maintaining liquidity in their assets. So direct provision of credit to agriculture is discounted by them, except in the rare cases mentioned above, and any help given is indirect, through grant of accommodation to some moneylenders and indigenous bankers and to merchants who undertake the marketing of produce. Even in Western Countries, as the foreign experts associated with the Banking Enquiry Committee stated, the commercial banking system becomes slower, the nearer it comes to agriculture and stops entirely at the outskirts of the agricultural line.[5]

It is usual for merchants to take advances from these banks on the security of produce deposited in the bank's godowns and insured against fire and loss through floods, etc. The insistence on these conditions which impede movement of produce, makes it difficult even for merchants to secure as much accommodation from them as they would like. The banks find it impossible, consistent with their own safety, to relax these conditions. The situation would improve if agricultural paper, similar to commercial paper, were regularly drawn for financing the movement of crops. The banks would then have a self-liquidating instrument, with a currency limited to six months or thereabouts at their disposal, and they

5. Report, p. 193.

would find it safe enough to discount it in the ordinary way. But the first requirement is the building of warehouses where produce may be deposited and receipts for such deposits issued, and the second, the development of the practice of drawing agricultural paper.

Such paper when drawn by cultivators for financing production operations too, may become acceptable instruments of credit to banks, inspite of the longer period for which they will naturally run. Some banks which have the facility for it, may find it advantageous and profitable to specialize in this type of business. The existing paucity of such specialized institutions on the joint stock model in the State, as well as in the country generally, is rightly attributed to the failure which has attended attempts at working them in the past, in an unfavourable context. With the creation of the right kind of context such agricultural banks may be formed and successfully worked.

The Exchange Banks operating in the State are primarily interested in financing foreign trade and so have their offices in the more important ports. Since, however, the bulk of our export trade is in agricultural produce, indirectly they help to finance the movement of crops from the producing centres to the ports. Export firms and merchants regularly seek accommodation from these banks and use the accommodation secured, at times, to make advances of money to the cultivators even at the beginning of the season, on the condition expressly laid down that the crop will be sold to them. Thus the funds they disburse indirectly reach the cultivators to meet production expenditure, in addition to the more important part they play in the marketing of produce. The amounts involved are comparatively negligible, and it is only by a stretching of the imagination that Exchange Banks may be held to be rural financing agencies.

*The Imperial Bank of India*: The Imperial Bank of India, though constituted on a joint stock basis, is different from the other joint stock banks, as its incorporation is under a special act of the legislature which has imposed certain restrictions on its business. These restrictions have been slightly modified on the constitution of the Reserve Bank of India as the Central Bank of the country and the diversion of Government banking from the Imperial Bank to the new institution. Still as the Imperial Bank acts as the agent of the Reserve Bank in all places where the new bank has not got a branch of its own, some restrictions on its activity are still thought necessary. One such restriction prohibits the undertaking of land mortgage business, and another limits the period of advances

and loans relating to the financing of seasonal agricultural operations to nine months. The first restriction virtually prevents the bank from providing long term finance to agriculture. The second permits the grant of short term loans for production purposes, but on the strict basis of punctual repayment within nine months. Few agriculturists are however in a position to take advantage of this facility. The bank is permitted to make advances and open cash credits against goods hypothecated to it, and so can take some part in the provision of marketing finance. Still as a rural credit agency the bank is of little importance, the whole of the tradition built up during the years of its existence precluding it from embarking on such business. In some of the States of India, such as Bombay and the Punjab, advances to the big landlords on personal security, with sureties or on the security of produce or of gold, have been given. Attempts were also made, as a matter of policy, to include even small men, needing loans as small as Rs. 100, provided the security offered was good.[6] But organized in a manner ill-fitted to meet the needs of small men, much success has not attended this experiment. Direct dealings with agriculturists are thus negligible, while indirectly the bank is in a position to give and has actually been thus giving aid to agriculture through the accommodation granted to moneylenders, indigenous bankers and traders. Its extent cannot however be assessed.

*The Government*: Governments in India, in pursuance of their long-established policy of 'Paternalism', have been for a long time advancing money to agriculturists for land improvement and for meeting the expenses of the annual operations. Under the Land Improvement Loans Act of 1883, State governments are empowered to grant loans to landholders individually or on joint bonds for effecting improvements on land, such as construction of wells, tanks, other irrigational or drainage works, protective works to afford protection from floods and erosion and other works which are declared to be improvements under the rules. The maximum period for which these loans may be given is 35 years under the Act, but the rules framed under the Act in Madras have reduced it to 20 years. In actual practice the period rarely exceeds 5 years and is usually determined on the basis of the amount borrowed and the purpose for which the loan is taken. Repayment is by instalments, collected along with land revenue, spread over the period fixed. The rate of interest charged was till lately 6¼%, but under the Grow More Food Campaign was reduced to 5½%. The administration of the Act is through the Revenue Department to which applications have

6. Central Banking Enquiry Committee Report, p. 191.

to be made by intending borrowers, and the loans are granted within the limits of the repaying capacity of the borrower, after a fairly thorough scrutiny.

Under the Agriculturists' Loans Act of 1884 too loans are granted to agriculturists for short or medium periods for the purchase of seed, manure, cattle, agricultural implements, for the rebuilding of houses, etc., and collected in a lump sum at harvest time along with land revenue if they are for a year, or by instalments, if for more than a year. In localities affected by natural calamities, such as, cyclones, floods, earthquakes, etc., under the same enactment agricultural distress loans, upto a maximum of Rs. 200 per borrower, are granted at a low rate of 3% interest. It is usual at such times for a Special Officer to be appointed to tour the affected areas and grant relief. Other loans under this Act bear the same rate of interest as the Land Improvement Loans and are administered in the same way by the Revenue Department.

Under the Grow More Food Campaign, in addition to the reduction of the rate of interest referred to above, the purposes for which loans may be granted have been increased, so as to include land reclamation too, and the Agricultural Department also through the District Agricultural Officers are empowered to grant loans under the Agriculturists' Loans Act. For the purchase of seed and manure, small interest free loans have been sanctioned.

These 'taccavi' loans, as they are collectively called, are based on sound principles of credit and possess the merit of low rates of interest and repayment by instalments. They are granted only on the basis of credit worthiness and for purposes approved as legitimate for the employment of borrowed funds. In spite of these advantages they have all along remained unpopular, and prior to the inauguration of the Grow More Food Campaign, the annual budget allotment used to remain partially undisbursed. The red-tape attaching to departmental administration caused long delay in the grant of loans, never less than a year, in striking contrast to the methods followed by moneylenders, and the insistence on punctual repayment was felt by many as an inconvenient innovation. Scrutiny of loan application in relation to the repaying capacity of the borrower could not be dispensed with, and the sanctioned amount had to be fixed within that capacity, irrespective of the amount applied for or needed for the purpose mentioned. The inadequacy of the loans compelled the borrowers to still have recourse to the moneylenders for the denied portion of the loan, thus partially nullifying the objects of Government policy, while the illegal tributes regularly demanded by revenue subordinates as

consideration for favourable disposal, wiped away the advantages of the low rates of interest charged. The Famine Commission of 1901, the Royal Commission on Agriculture and the Central Banking Enquiry Committee all deplored the administrative defects of the system, especially curruption and delay, and urged their removal through appropriate action; still in spite of the best efforts of the Government, they tend to persist. It is of the essence of these advances that they should be given at the proper time, for they are expected to serve not only as productive, but also as protective, loans. A great part of their value is lost by undue delay. To lessen the period involved in the disposal of applications, suggestions have been made that the administration of these loans should be vested in the Agricultural Department whose contact with the cultivators is based on greater confidence and cordiality, or in the co-operative societies wherever such exist. The Central Banking Committee, after a detailed review of the opinions expressed by the Provincial Committees and, previously, by the Royal Commission on Agriculture and the practices followed by the provinces, definitely rejected the latter suggestion, while approving the idea of Government using these societies for the distribution of these loans, without responsibility regarding sanction or collection. The other suggestion that the Agricultural Department should be used for the purpose has not been examined by any authoritative body, yet nevertheless has many features to commend it, and is obviously gaining ground. The Government of Madras is reported to be seriously considering the question and the practice inaugurated under the Grow More Food Campaign, of entrusting the task to District Agricultural Officers, is perhaps the first step in implementing this suggestion. In most of the States of India now it is usual for the Government to give Land Improvement Loans on the advice of the Agricultural Department.[7]

While everything possible should be done to remove existing defects and consequent unpopularity of the system, the question whether the Government should embark upon a full-fledged policy of granting credit to agriculture, both long-term and short-term, and serve as a normal credit agency is one which appears to require separate consideration. The Central Banking Enquiry Committee, in opposition to the findings of the Royal Commission on Agriculture,[8] emphatically expressed themselves in favour of limiting the operations of the Agriculturists' Loans Act to times of emergency and stress. Governmental attempt to supply normal finances for

7. Statutory Report of the Reserve Bank.
8. Banking Committee Report, p. 184.

annual agricultural operations is, as some of the Provincial Committees state, bound to be sporadic and therefore unsuccessful and, further, is likely to militate against the generation of any feeling of self-help among agriculturists. Such finance is advisedly supplied by the specialized credit institutions set up for the purpose. However during times of widespread distress, in localities affected by natural calamities, the normal credit institutions may find it impossible to meet the situation, without experiencing a serious threat to their very existence. At such times governmental aid is imperative and has to be given in a liberal fashion. The same view was reiterated by the Reserve Bank of India in their Statutory Report of 1937.[9]

As regards loans under the Land Improvement Loans Act, the normal supply of funds by the Government may not be so onerous a task as the grant of the other type of loans, for the reason that the demand for such loans from individual agriculturists will be intermittent and the funds needed for them will ordinarily be provided, after the scheme has been in existence for sometime, by the annual repayments by borrowers. The absence of sufficient credit institutions too to give this kind of accommodation on economic terms makes it incumbent on the Government to undertake this task.

The annual amounts set apart for this purpose have been greatly increased under the Grow More Food Campaign, and from the available figures it is seen that full advantage of the provision is being taken by the cultivators. When the Central Banking Enquiry Committee reported, the annual amounts disbursed under the Land Improvement Loans Act and the Agriculturists' Loans Act were found to be (1927-28) Rs. 12·7 lakhs and Rs. 11·54 lakhs respectively. In 1942-43 only Rs. 9·53 lakhs (Accounts) were thus lent. Since then larger sums have been allotted in the budget and disbursed to agriculturists. For the years 1942-51 the figures are given below:

TABLE XXVI

| | Rs. (lakhs) | |
|---|---|---|
| 1942-43 | 10·37 | (Accounts) |
| 1943-44 | 27·37 | " |
| 1944-45 | 60·20 | " |
| 1945-46 | 82·91 | " |
| 1946-47 | 93·33 | " |
| 1947-48 | 200·00 | " |
| 1948-49 | 39·62 | " |
| 1949-50 | 85·00 | Revised estimate |
| 1950-51 | 87·00 | Budget estimate |

The bulk of these loans have been for land improvement.

9. Report, p. 9.

*Nidhis and Chit Funds*: Two indigenous credit institutions peculiar to Madras are Nidhis and Chit Funds. The Chit Fund has a more ancient origin than the Nidhi which for the first time came to be instituted in 1850. But as credit institutions the nidhis are to-day more important than chit funds and more widespread in the State.

The first nidhi was started by certain officials in Madras, on the model of the English Building Society, to escape the usurious rates of the moneylenders. In the beginning it was a terminating fund, all members promising to subscribe month by month for a definite period (in the first society it was 84 months) at the termination of which the fund would be wound up, each member receiving back his subscription, with a share in the profits. Monthly collections were given as loans to members at a low rate of interest with penalty for delay in repayment. Later on these funds became permanent, secured registration under the Indian Companies Act, expanded their business by receiving deposits and lending to non-members and manifested a definite gravitation towards the model of the joint-stock bank. Starting as mutual loan societies they have been transformed in the process of development into permanent banks. Deposits have to-day taken the place of share capital of olden days as the source of funds, and members stipulate to make a definite recurring deposit month by month instead of subscription to the share capital. Lending to non-members started as an outlet for surplus funds, and is now a regular feature of these institutions. Rates charged are low when compared to the moneylender's or the indigenous banker's rate, but in recent years have tended to rise. The Madras Banking Enquiry Committee found that 12 to 15 per cent were not unusual among them. For default, penal rates are charged which appears to be the most important source of high profits.

The nidhis have certain special features which mark them off from joint-stock banks on the one hand and from chit funds on the other. The non-fulfilment of the requirement under the Companies Act, that 5% of share capital should be paid on application, and the facility given to members to withdraw their share capital on termination of the obligations they enter into with the society distinguish them from joint-stock banks, and their permanent character, receipt of deposits and lending to non-members, from chit funds. But legal difficulties manifested in their working and the necessity to give proper security to the depositors, by making share capital non-withdrawable, have in recent years operated, in the direction of making some of them full-fledged joint-stock banks.

In rural areas, as also in the urban areas where they exist, they serve the useful purpose of encouraging thrift among members, collecting small savings and promoting co-operative endeavour. Retention of their special characteristics will contribute to their popularity and increased usefulness in the future, and so should be safeguarded by appropriate legislation. The Central Banking Enquiry Committee recommended the passing of a special Act, to be called the Nidhis and Chit Fund Act, to govern their working, as the Companies Act was not suited for the purpose. Such a measure will ensure their continued existence as separate institutions catering to the needs of certain special investors and borrowers.

Up-to-date figures are not available relating to the magnitude of their business, but that it is considerable is revealed by the figures for 1929. There were in that year 218 nidhis, with a paid-up share capital of 2·45 crores and deposits from the public of Rs. 1·17 crores, together making a total working capital of Rs. 4 crores. They are very popular in the Coimbatore district where nearly half the total number of nidhis are located.

The Chit Fund is an institution for raising small amounts of money on the principle of mutual help. It is a terminating fund to which contributions are made by the members every month, or periodically, for a definite period according to the number of shares taken, and the money thus collected periodically is made available through different methods to the members. The person who runs the chit, or the promoter, is responsible for collection and disbursement and receives some consideration for discharging this responsibility. He reaps his reward in a variety of ways, the actual method depending on the type of chit run. Usually he gets his reward by getting the first instalment without discount. There are two principal types of chits, the auction chit and the prize chit. In the auction chit the money collected periodically is put up to a dutch auction and the member who offers the biggest discount gets the use of it. The discount is deducted from the collection and paid immediately to the other members, or lent out at interest and allowed to accumulate, for distribution among the members when the fund is terminated. Immediate distribution of the discount is the common method. In the prize chit the member who is to get the use of the instalment is determined by lot and he gets the full instalment without interest. The members who have drawn the lot are eliminated in the subsequent drawings, but they have nevertheless to pay the instalments throughout the period of the chit. A variant of the prize chit is the one where payment of the instalment is made

after deduction of interest. This interest is accumulated and in the end distributed among the members. Members who have more than one share can participate in the auctions or in the drawings as many times as they have shares. All shares have to be fully contributed to till the end.

A third, but rather uncommon, variant of the prize chit is one where there will be more members than instalments and the members drawing the lot will get a larger sum of money than they contribute. There will be as many prizes as there are instalments, and the value of the prize will be larger than the full value of the contributions made by each member, but nevertheless forming only a proportion of the periodical collections. This value is fixed even when the chit is promoted. The prize winner at each lot drops out altogether, without having the liability to make future contributions, the others continuing to do so. At the end of the period the members who have not drawn prizes will be repaid what they have contributed. The promoter here takes the full responsibility for all payments, and reaps his gains by getting the use of the surplus finds collected at each drawing without interest. The periods for which such chits are run are made long enough and a large membership enlisted, in order to make the profitability of the venture large enough to pay the prizes, repay the contributions to non-winners and yet reward himself for his trouble. Periodical collections here will be very large, and even after the prizes are paid, a large surplus will be left which the promoter lends out at interest or invests in some venture. But having once got use of the funds, the temptation to repudiate payment is great, and fradulent practices in connection with this type of chit is fairly common. The promotors have to be men of substance, able to meet liabilities even when members fail to make contributions, if membership is to be large. Some of the banks in Travancore have run this type of chits.

The chit fund is a popular institution in Malabar, Travancore and Cochin and is really indigenous to the Kerala country. It is widespread in the neighbouring districts of Tinnevelly and Coimbatore and exists here and there in other parts of the Tamil country too. It is rare in the Telugu area.

*The Reserve Bank of India*: In addition to the credit agencies detailed above, there exists for the State, as for the whole of India, as a higher financing agency, the Agricultural Credit Department of the Reserve Bank of India. Even when the idea of starting the Reserve Bank of India to function as the Central Bank of the coun-

try was first mooted, it was understood that among its functions the financing of agriculture should find an important place. When the Act was passed incorporating the Reserve Bank, provision was expressly made by Clause 54 for the inauguration of an Agricultural Credit Department. That Department was required: (1) "to maintain an expert staff to study all questions of agricultural credit and be available for consultation by the Governor-General in Council, Local Governments, provincial co-operative banks and other banking organization, and (2) to co-ordinate the operations of the Bank in connection with agricultural credit and its relations with provincial co-operative banks and any other banks or organizations engaged in the business of agricultural credit". By Clause 55 (1) the Bank was required further to make proposals to the Governor-General in Council at the earliest practicable date and, in any case, within three years from the date on which the clauses relating to the Agricultural Credit Department came into force, for legislation for (a) "the extension of the provisions of this Act relating to scheduled banks to persons and firms, not being scheduled banks, engaged in British India in the business of banking, and (b) the improvement of the machinery for dealing with agricultural finance and methods for effecting a closer connection between agricultural enterprise and the operations of the Bank".

Section 17 of the Act under sub-sections 2 (b) and 4 (a), (c) and (d) laid down provisions governing the terms on which the Bank may lend to Provincial Co-operative Banks. Loans and advances thus made permissible were:

(a) Loans or advances against Government paper for ninety days to provincial co-operative banks and central land mortgage banks, declared to be provincial co-operative banks, and through them to co-operative central banks and primary land mortgage banks. [Section 17 (4) (a)].

(b) Similar loans and advances to provincial co-operative banks and central land mortgage banks, declared to be provincial co-operative banks, and through them to co-operative central banks and primary land mortgage banks, against approved debentures of recognized land mortgage banks, which are declared trustee securities and which are readily marketable.

(c) Advances to provincial co-operative banks for ninety days against promissory notes of central co-operative banks endorsed by the provincial co-operative banks and drawn for financing seasonal agricultural operations — or the marketing of crops — [Section 17 (4) (c)], or rediscount of such promissory notes maturing within nine months — [Section 17 (2) (b)]. These have to be time pro-

missory notes and not demand notes, so that the bank may know the exact amount of discount on the bills to be discounted.

(d) Loans and advances not exceeding ninety days to provincial co-operative banks against promissory notes of approved co-operative marketing or warehousing societies, endorsed by provincial co-operative banks and drawn for the marketing of crops — [Section 17 (4) (c)], or rediscount of such promissory notes maturing within nine months — [Section 17 (2) (b)]; or loans and advances on the promissory notes of provincial co-operative banks supported by warehouse receipts or pledge of goods against which a cash credit or overdraft has been granted by the provincial co-operative bank to marketing or warehousing societies — [Section 17 (4) (d)].

These provisions were designed to make the Bank an important agency in the supply of agricultural finance and in the reform and rectification of other agricultural credit agencies. But it was made clear that the bank could only make short-term loans available and that through the provincial bank. The proposals which it was called upon to make under Section 55(1) were made in two reports published in 1936 and 1937. In these reports and in the bulletins issued from time to time suggestions were made by the bank to reform the co-operative movement, and a draft scheme was formulated for the linking of the indigenous bankers with the Reserve Bank. The principles which should govern the bank's relation with agricultural credit were also laid down in unequivocal language.

Right from the start the bank made it clear that, consistent with its position as the Central Bank of the country, primarily concerned with the maintenance of monetary stability and control of the banking structure, it has necessarily to be "the Banker's Bank in emergency and not their ordinary financing agency". Agricultural credit institutions could look to it therefore only for emergency finance and not for any aid in the supply of normal finance. This stand was a little disappointing to those credit agencies and also to those sponsors of the scheme who had expected the Bank to play a very important part in the day to day supply of agricultural finance. From this position the Bank has not deviated, nor is it prepared to do so, and in the conditions it has laid down for the grant of credit to co-operative institutions and the linking of the indigenous bankers with itself, this principle is rigidly observed.

The conditions laid down by the bank for the grant of such accommodation, as is permitted under the Act, to co-operative insti-

tutions were conveyed to them in a circular letter in 1938. They were the following:—

(1) Provincial banks which are approved for financial assistance must maintain financial statements in certain prescribed forms and submit them periodically.

(2) The Bank must have the right to inspect such banks.

(3) The Provincial Banks must maintain minimum balances with the bank, prescribed by the Bank from time to time. The amounts now prescribed are 2½% of demand liabilities and 1% of time liabilities of the bank at close of business on any day.

(4) The advances made by the Bank must not be made use of by the provincial co-operative banks for the purpose of continuing finance.

(5) Instructions issued by the Bank regarding the criteria of sound banking and the procedure laid down from time to time for obtaining loans and advances must be followed.

In addition to these, further conditions were laid down, applicable to co-operative Central Banks, if their promissory notes are to receive rediscount facility with the Bank. They were required (1) to give a detailed account of their financial position and the condition of the primary societies financed by them, (2) to maintain fluid resources in the form of cash and government securities amounting to 40% of their deposit liabilities, (3) to confine their operations and those of the primary societies financed by them to short-term financing and (4) to reorganize the directorate with greater representation for the non-borrowing elements.

These conditions were felt by most of the institutions concerned as too onerous to be fulfilled and too costly to make their working financially successful. The Madras Committee on Co-operation (1940) strongly condemned them as unjustifiable and uncalled for and directly opposed to co-operative objectives and co-operative experience.[10]

Finding that the response of the co-operative institutions to the offer of credit, under the conditions laid down, was very poor, the Bank in 1942 offered fresh terms under Sections 17(2) (b) and 17(4) (c). These new terms consisted of a concession rate of 1% below the Bank rate for accommodation for the marketing of crops, provided the benefit of the low rate was passed on to the ultimate

10. Report, paras 177 and 259.

borrower. The response being still poor, the scheme of rebate was extended in 1944 to cover bills and promissory notes drawn for purposes of financing seasonal agricultural operations also. This rebate was further increased to 1½% in 1946. Under these revised schemes the Bank is ready to grant accommodation to provincial co-operative banks at 1½% for the purposes mentioned above. (The Bank rate is only 3% and if rebate is deducted, the rate of interest applicable will be only 1½%). Still the provincial co-operative banks find the conditions too stringent and only two provincial co-operative banks have availed of the facilities offered, and that to the extent of Rs. 3·55 lakhs.[11]

Section 17 (4) (d) has remained a dead letter owing to the absence of warehouses, though attempts were made by the Bank to get them established under provincial government auspices. A draft Warehousing Bill was circulated to all the provinces and the important Indian States, but only one or two provinces initiated legislation to that effect.

The co-operative movement's objections, conveyed in its correspondence with the Reserve Bank and in its reports and conference resolutions, appear to be against the insistence on the maintenance of minimum balances, the passing on of the reduced rate of interest to agriculturists, the period of the loans and the production of warehouse receipts in the case of loans given for the marketing of produce. Some co-operators have suggested that Government paper should be accepted in lieu of cash in respect of the minimum balance and the goods in possession of societies should be considered as good a security as negotiable warehouse receipts. The period for which loans may be given is also sought to be extended to 12 months. Other suggestions are that the debentures of Central Mortgage Banks should also be freely accepted as security, that direct dealings with Co-operative Central Banks should be established and that the loans and advances should be given for other than the prescribed purposes, as for instance, the financing of procurement operations.

But the Bank has not found it possible to accept any of these suggestions and modify its terms accordingly. In the Bank's view most of the conditions prescribed are the minimum required for ensuring sound banking practice, both in the creditor bank and in

11. *The Role of the Reserve Bank of India in the Scheme of Agricultural Credit* by K. Subba Rao, Chief Officer, Agricultural Credit Department— Reserve Bank of India Bulletin, August 1947 and the Madras Journal of Co-operation, December 1947, p. 261.

the debtor bank, and any relaxation in them will open the way for gross mismanagement. Some of the objections of the Co-operative Movement are alleged to have their origin in a misunderstanding of the condition laid down, and certain others, in an inadequate appreciation of the responsibilities of a Banker's Bank. For instance, the insistence that the concessional rate of interest offered should be passed on to the ultimate borrower has been misunderstood to imply that loans should be made to agriculturists at that low rate. What it obviously means, as has been explained by the Chief Officer of the Agricultural Credit Department,[12] is that the ordinary lending rate should be reduced by the amount of the concession. In spite of this interpretation some co-operators remain sceptical of the practicability of lending at the lower rate out of funds borrowed outside the Reserve Bank. So also the maintenance of prescribed balances will not appear to be an onerous condition if its real purpose is fully appreciated. The cash reserve of the Reserve Bank is made up of the minimum balances maintained by the affiliated institutions and is really a common pool maintained for meeting emergencies and not a security for the accommodation given by the Bank. All institutions affiliated to it have to make their contribution and this condition cannot be dispensed with. The contribution has been reduced to the minimum in the case of Provincial Co-operative Banks, only half of what is prescribed for scheduled banks, and it should not be difficult for them to maintain this balance as part of the cash reserve which they in their own interest have to maintain against their liabilities.[13]

But some of the other suggestions are receiving the attention of the bank, such as extension of the period of the loans and acceptance of the debentures of Mortgage banks as security.

The small response so far evoked in spite of the repeated efforts of the Reserve Bank to water down the conditions and increase the facilities, is perhaps an indication that the co-operative institutions have a plethora of funds and do not at present stand in need of the Bank's aid.

While this may be so under present conditions when lending rates are high, the imperative need for reducing that lending rate to a level which will convert the deficit economy of agriculture into a surplus economy should not be lost sight of. The service

12. *Ibid*, p. 263.
13. *Ibid*, p. 264.

that the Agricultural Credit Department is expected to render is to help in that process, and all that may be possible in that direction should be done, by the Bank and the co-operative institutions working together in a spirit of mutual accommodation.

Under Section 55 (1) (a) the Bank was required to make proposals for legislation to extend the provisions of the Act relating to the scheduled banks to persons and firms doing banking business in British India. This clause was specially intended to draw the indigenous bankers into the orbit of the Reserve Bank which, from the point of view of the Bank's control over banking and from that of the efficient supply of agricultural credit, was felt to be desirable. On this behalf proposals were made by the Bank in 1937 laying down the terms and the conditions under which indigenous bankers could be affiliated to the Reserve Bank and enjoy facilities for rediscount, remittance, etc., similar to those enjoyed by the scheduled banks. Many of these conditions are identical with the ones prescribed for co-operative institutions, with a few additional conditions necessitated by the peculiar kind of business methods pursued by the indigenous bankers. They are :—

(1) That the indigenous bankers should confine their business to banking proper as defined by the Indian Companies Act and any other business they might be conducting should be wound up within a reasonable time.

(2) That they must maintain proper books of accounts, have them audited by registered accountants and submit to the Bank's inspection whenever called upon to do so. The Bank should further have the right to call for any information deemed necessary for determining the financial status of the banker.

(3) That they must file with the Reserve Bank the periodical statements prescribed for scheduled banks and in the interests of depositors publish the returns prescribed for banking companies by the Companies Act and be liable to the same penalties for non-compliance.

(4) That the Reserve Bank will have the right of regulating the business of the bankers on banking lines when necessary.

(5) That each banker who wishes to be affiliated to the Bank should have a capital of not less than two lakhs available for banking business, and he should state the amount of capital thus available.

(6) That they should indicate when required (a) the names and the extent of interest of their business partners if any, and (b) if any of the bankers is a member of a Hindu joint family, the names and interests of the co-sharers. In both the cases, statements will be required from the co-sharers that they are prepared to take their full share in the business and its liabilities.

(7) That during a period of five years from the date of their registration as private bankers, they will be entitled to open an account with the Reserve Bank at any of its offices and be otherwise subject to the same conditions as the scheduled banks, except that during such period they will not be required to furnish the compulsory deposits set out in Section 42 of the Reserve Bank Act, unless any of their weekly statements discloses that their time and demand liabilities are five times or more in excess of their capital in the business.

If these conditions are fulfilled the bank would be prepared to extend the privilege of rediscount with itself against eligible paper to the indigenous bankers, the right to secure advances against Government paper and remittance facilities similar to those given to the scheduled banks. The scheme was to be tentative for five years before the end of which the Bank reserved the right to frame proposals for legislation, further to co-ordinate or regulate the position of the private banker.

These proposals have not been acceptable to the indigenous bankers who still wish to cling to their traditional secret methods and carry on non-banking with banking business. The Bank too has been unwilling, consistent with its own safety, to modify the terms.

As regards the linking of the moneylender to the Reserve Bank, the Bank has stated in the clearest of terms that such a direct relation is not possible, but that in discharge of the special responsibility imposed upon it in regard to agricultural credit, it would be prepared to rediscount at special rates, through the grant of rebates, bills drawn by approved moneylenders for advances to cultivators against produce and discounted by the scheduled banks. The grant of this facility is however made to depend on the willingness of scheduled banks to give advances to moneylenders at low rates of interest and the willingness of the moneylenders in their turn to pass on the low rates to agriculturists.

This offer also remains unavailed of, as the scheduled banks are not prepared to discount moneylender bills, or bills drawn by

agriculturists and endorsed by moneylenders. The reasons given by scheduled banks are (1) that agriculturists are not in the habit of drawing bills which would commit them to payment on a fixed date, (2) that it is difficult for them to guage the credit worthiness of the moneylenders, (3) that if first class bills are discounted at low rates there will be little scope for rediscounting them with the Reserve Bank and (4) that debt relief measures had introduced an element of uncertainty into the sphere of agricultural credit.

The unwillingness of the scheduled banks to undertake the responsibility of discounting these bills has virtually led to the abandonment of the scheme.

The net effect of all these efforts and proposals of the Reserve Bank is that none of the credit institutions engaged in the supply of agricultural credit is in a position to receive any accommodation from the bank except on terms which they cannot accept. The role of the Reserve Bank at present therefore is insignificant in the rural credit field. But its potential is great, and if properly tapped; can give additional strength to the agricultural credit agencies, directly through the grant of accommodation to them and indirectly through the reform and development of the money market.

## Chapter XIV

# AGRICULTURAL CO-OPERATION

Co-operation when it was initiated into India took the form of credit co-operation and had in the beginning the limited objective of solving the rural credit problem of the country. The reason for this is to be found in the circumstances attending its introduction. It was thought of as the right solution for an urgent and stubborn problem and originated more from practical necessity than from a recognition of the ethical superiority of its aims and ideals. Frederick Nicholson, a Madras Civilian, whose name will for ever be linked with the initiation of the movement in India, suggested the starting of village co-operative credit societies on the model of the Raiffeisen Societies of Germany as a remedy for the eradication of rural debt and the reform of the rural credit system, into the investigation of which he had been put on special duty. It was as a result of his valuable report on Land and Agricultural Banks and the specific suggestion it contained that the All-India Co-operative Societies Act of 1904 was passed. Subsequently as a result of experience and from the growing conviction that the prosperity of the agricultural classes needed a simultaneous many-sided attack on the agricultural problem and that the co-operative form of association was the most efficient instrument for achieving the purpose, the amending Act of 1912 was passed permitting the registration of non-credit societies as well.

But the early start, the urgency of the problem of rural credit, the simplicity of its organization and working and possibly its perfect adaptation to the genius of the people, made the co-operative movement as it progressed in all the different States, preponderantly a credit movement. Even today after 46 years of its existence, and in spite of sustained efforts in the direction of developing the non-credit side, it continues in the main to be a credit movement. Thus in Madras in 1948-49 out of 15,509 agricultural societies 13,740 were credit societies, and out of a total membership in agricultural societies of 1518,500, 1047,876 were members of credit societies. The predominance of the credit side is more marked in agricultural co-operation than in urban co-operation in all the States of the country, and so the history of agricultural co-operation in India is really a history of the credit movement.

Nevertheless through the formulation of appropriate policies and unremitting efforts in those directions, non-credit societies of

various kinds have been started. Thus there are now in existence purchase and sale societies, production societies, production and sale societies, marketing societies, irrigation and kudimaramat societies, consolidation societies, colonization societies, land reclamation societies, better living societies, cattle breeding societies, milk supply societies and a few other types catering to the needs of the agricultural community. In fact there is no purpose in the life or work of an agriculturist which cannot be achieved through the agency of the co-operative principle or for which co-operation is unsuitable. The economic history of every country, particularly the history of its agriculture, since the middle of the 19th century, has been partly a history of the progressive application of the co-operative form of association to economic activity. India has been no exception to the rule, but unlike certain other countries, non-credit co-operation has not had here either a spectacular growth or much to its credit by way of result. Still this aspect of the movement is not a passing aspect or one pre-ordained to have a languishing existence, but an aspect destined to stay and with the progressive development of which the prosperity of our agricultural classes is intimately bound up. A study of agricultural co-operation thus must comprehend both credit and non-credit co-operation.

*Co-operative Credit organization*: The co-operative credit organization for agriculture as it exists to-day in the State is made up of the village credit societies called primary societies, the higher financing banks and the land mortgage banks. The primary societies with their financing banks form a unified organization, for dispensing short term and intermediate credit, while the land mortgage banks deal in long term credit. The separation of long term from short term and intermediate credit was a later development in the evolution of co-operative credit in the State and was consequent on the recommendation of the Townsend Committee on Co-operation to that effect. To-day they exist as distinct but valuable complementary arms of the credit structure and operate under the provisions of different legislative enactments. The short term credit organization is governed by the Madras Co-operative Societies Act of 1932 and the land mortgage banks by the Madras Co-operative Land Mortgage Banks Act of 1934.

The primary societies modelled on the Raiffeisen Societies of Germany with unlimited liability, circumscribed area of operation, restricted dividends, democratic control and gratuitous service, form the broad base of the pyramidal credit edifice and give strength or weakness to the structure according as they are in-

herently sound or unsound. Though conceived originally as multi-purpose societies, they have virtually been converted into single purpose societies by the force of circumstances. They are at present solely engaged in granting loans to members for productive purposes and such other purposes as are approved under the rules and by-laws. They draw their funds for the purpose from share capital, entrance fees, member and non-member deposits and loans from central banks. The loans are given to members on personal security with one other member as surety, in accordance with the strict principles of Raiffeisen, and also on the mortgage of land and the pledge of produce. The rates of interest charged are kept as low as possible, and at present do not exceed 7½%, and easy conditions of repayment are attached to the loans.

On 30th June, 1949, there were 13,740 such societies with a membership of 10,47,876. Average membership per society was 78 and average loan per member was Rs. 62·9. There has been a steady rise in average membership since 1935, and the average loan per member too has been rising, after a fall during the war. The total working capital at their disposal during the year 1948-49 was Rs. 857·95 Lakhs, of which borrowed funds represented Rs. 537·35 Lakhs. Loans outstanding against members were Rs. 659·12 Lakhs. (A statement relating to the operations of these societies during the period 1935-49 is given in table XXVII.)

In the growth of these societies in the State, as the Madras Committee on Co-operation 1940 have stated, four distinct phases are noticeable. At first there was a period of slow expansion (1904-1918) when the agricultural classes were familiarizing themselves with the principles of co-operative credit and the departmental officers were punctilious about an adequate preparation of the ground before starting societies. This was followed by a period of rapid expansion (1918-1930) when quantitative results appear to have appealed to the officers to a greater extent than quality. During this period the number of societies of all types increased from 3,676 to 15,238 and membership increased from 2,44,297 to 9,74,999. The third period synchronized with the World Depression (1930 to 1937) and was characterized by a complete check to expansion and much inactivity and mortality among existing societies. The Co-operative movement received a rude set back during this period, partly as a result of world forces which adversely affected agriculture in India to a greater extent than other branches of activity, and partly as a result of the hasty expansion engineered in the previous period. To meet the situation the Department of Co-operation adopted a policy of consoli-

dation and rectification. Both the number of societies and the membership showed a progressive decline during this period, and those societies which were past the stage of resuscitation were more or less compulsorily liquidated.

After 1937 a slow improvement started, and with it the fourth phase of the movement began. The number of societies and the membership increased, and during the war period which followed, though there was a fall in the number of societies, membership went on steadily increasing. While the number of societies fell from 11,041 in 1939-40 to 10,792 in 1944-45, membership increased from 5,97,741 to 6,37,036. Subsequently both the number of societies and the number of members have been increasing. Debt relief legislation and the consequent drying up of certain sources of credit in rural area were perhaps the more important factors responsible for this steady expansion.

The large majority of existing societies have unlimited liability, but a few, not exceeding 110, have adopted limited liability. These exist in various stages of business success and financial health. According to audit classification societies are divided into four classes A, B, C and D. 'A' societies are those which are thoroughly good, free from indebtedness to Central Banks and outside creditors, and are therefore able to carry on business with the funds raised locally as deposits. 'B' class societies are indebted to Central Banks etc., but can easily discharge their outside liabilities with share capital and reserve fund invested in Central Banks. These have some defaulters and so are not throughly good. These two classes are sound societies and do not present problems. 'C' class societies have liabilities to Central Banks and outside creditors exceeding their share capital and reserve fund, and so depend upon the good character of their loans to meet those liabilities. These societies get into difficulties owing to the doubtful character of some of their loans and the large growth of overdues. The fourth or 'D' class societies are past redemption, with a majority of bad loans which cannot fully be collected and with a very high percentage of overdues. They exist more or less in a dormant state, heavily indebted to Central Banks and therefore unable to borrow further from them or do business with the members. The only course open to them is liquidation. They are really threatened with liquidation if within two years no improvement is effected.

The large majority of the societies in existence belong to category C and nearly a tenth to Category D. According to the report of the Madras Post-War Development Committee on Co-operation,

TABLE

*Madras*

Primary Agricultural Societies

*Statistics relating to the*

| Year | | Number of societies | Number of members | Average membership per society | Loans outstanding against members | Average loan per member | Overdues |
|---|---|---|---|---|---|---|---|
| | | | | | Lakhs Rs. | Rs. | Lakhs Rs. |
| 1935-36 | .. | 10943 | 524986 | 48 | 344·54 | 65·7 | — |
| 1936-37 | .. | 10456 | 509307 | 49 | 316·88 | 62·3 | — |
| 1937-38 | .. | 10451 | 522615 | 50 | 321·02 | 61·4 | 212·51 |
| 1938-39 | .. | 10743 | 565301 | 53 | 351·99 | 62·2 | 207·76 |
| 1939-40 | .. | 11041 | 597741 | 54 | 332·48 | 55·6 | 206·28 |
| 1940-41 | .. | 10934 | 606171 | 55 | 382·76 | 63·1 | 195·64 |
| 1941-42 | .. | 10907 | 618821 | 57 | 321·98 | 52·0 | — |
| 1942-43 | .. | 10893 | 627767 | 58 | 278·08 | 44·3 | 143·65 |
| 1943-44 | .. | 10821 | 628023 | 58 | 260·77 | 41·5 | 145·48 |
| 1944-45 | .. | 10792 | 637036 | 59 | 272·58 | 42·8 | 141·24 |
| 1945-46 | .. | 10877 | 666387 | 61 | 327·65 | 39·8 | 98·58 |
| 1946-47 | .. | 11375 | 758913 | 66 | 444·58 | 45·7 | 105·22 |
| 1947-48 | .. | 12056 | 843680 | 69 | 555·94 | 65·9 | 124·44 |
| 1948-49 | .. | 13740 | 1047876 | 78 | 659·12 | 62·9 | 110·86 |

XXVII

*State*

(Unlimited Liability)

*period* 1935-36 *to* 1948-49

| Share capital | Member deposits | Non-member deposits | Borrowing from Central Banks | Total borrowing | Reserve fund and other funds | Working capital | Profit | Loss |
|---|---|---|---|---|---|---|---|---|
| Lakhs Rs. | Lakhs Rs. | Lakhs Rs. | Lakhs Rs. | Lakhs Rs. | Lakhs Rs. | Lakhs Rs. | Lakhs Rs. | Lakhs Rs. |
| 55·76 | — | — | — | 307·35 | 89·62 | 452·73 | 7·21 | 21·01 |
| 51·80 | — | — | — | 280·48 | 96·68 | 428·96 | 6·34 | 19·01 |
| 51·25 | 17·38 | 20·47 | — | 285·92 | 98·61 | 435·78 | 4·91 | 19·26 |
| 53·11 | 17·87 | 21·28 | — | 316·89 | 78·42 | 471·11 | 4·03 | 20·29 |
| 54·60 | 18·37 | 20·71 | — | 316·02 | 80·02 | 473·26 | 4·19 | 20·52 |
| 53·87 | 17·39 | 17·67 | — | 290·21 | 80·92 | 451·20 | 4·95 | 20·21 |
| 53·78 | — | — | — | 286·85 | 82·74 | 446·50 | 5·30 | 19·89 |
| 53·76 | 14·46 | 22·47 | 204·58 | 336·84 | 85·31 | 407·17 | 6·33 | 17·65 |
| 54·11 | 14·02 | 25·44 | 184·28 | 235·23 | 86·40 | 394·02 | 5·87 | 15·65 |
| 52·07 | 15·48 | 27·61 | 188·94 | 233·47 | 119·85 | 406·39 | 5·95 | 14·58 |
| 59·22 | 17·30 | 31·82 | 235·65 | 279·21 | 131·92 | 470·35 | 6·62 | 12·72 |
| 80·06 | 16·72 | 26·09 | 347·65 | 393·72 | 122·22 | 596·00 | 8·34 | 11·70 |
| 98·47 | 18·43 | 26·98 | 441·88 | 445·30 | 133·46 | 722·64 | 9·09 | 11·66 |
| 128·05 | 22·81 | 29·97 | 534·69 | 537·35 | 138·27 | 857·05 | 11·84 | 11·44 |

on 20-6-44 out of a total number of 10,293 societies examined, 7,669 belonged to Class C and 1,064 to Class D. Table[1] XXVIII shows the number of limited and unlimited liability societies classified thus :—

TABLE XXVIII

Number of Societies — 10821

| | | Unlimited Liability | Limited Liability |
|---|---|---|---|
| A | .. | 158 | 17 |
| B | .. | 1402 | 11 |
| C | .. | 7669 | 18 |
| D | .. | 1064 | 4 |
| | | 10293 | 50 |

Particulars regarding 478 societies were not available

A later classification[2] relating to the year 1947-48 and covering 5,283 societies is given below:—

| | | A | B | C | D | Total | Percentage of D to Total |
|---|---|---|---|---|---|---|---|
| 1947-48 | .. | 177 | 1210 | 3455 | 441 | 5283 | 8·3 |

A comparative study of the operations of these societies during the last 12 years shows that the business transacted by them was less during the war period than in the pre-war period. Working capital, borrowed funds and share capital were all less in 1944-45, all of them experiencing steady diminution during the war period. From Rs. 452·73 lakhs in 1935-36, working capital increased to Rs. 473·26 lakhs in 1939-40 and thereafter steadily diminished to Rs. 394·02 lakhs in 1943-44. In 1944-45 there was a slight increase to Rs. 406·39 lakhs. Thereafter there was steady increase till in 1946-47 it exceeded the 1935-36 figure. The same

1. Taken from the Report, Post-War Development Committee on Co-operation, p. 7.

2. Taken from the Administration Report of the Registrar of Co-operative Societies, Madras.

kind of fluctuation is seen in total borrowed funds too. They increased from Rs. 307·35 lakhs in 1935-36 to Rs. 316·02 lakhs in 1939-40 and then diminished to Rs. 233·47 lakhs in 1944-45 and subsequently increased to Rs. 537·35 lakhs in 1948-49. Share capital also manifested the same diminution during the war period. The only items of working capital which appear to have experienced increases during the war period are the Reserve Funds and other funds of societies. They increased from Rs. 80·92 lakhs in 1939-40 to Rs. 119·85 lakhs in 1944-45 and to Rs. 131·92 lakhs in the following year.

Owned Capital in 1944-45 formed a higher percentage of working capital than in 1935-36 or 1939-40. It was 42% in 1944-45 as against 32% and 28% in 1935-36 and 1939-40 respectively. In 1948-49 however it was only 31%. This is undoubtedly a welcome sign, for it indicates that more societies are getting into classes A and B.

Member and Non-member deposits were in 1948-49, 22·81 and 29·97 Lakhs respectively. They formed roughly 2·6% and 3·5% respectively of total working capital. From year to year, fluctuations are seen in these figures, but from 1942 onward a steady increase is noticeable in non-member deposits with a slight set-back in 1946-47. They were larger in 1945-46 than in any year of the previous decade. Undoubtedly part of the savings of the agricultural community, rendered possible by the rise of prices and wartime prosperity have flowed into the village societies. Member deposits too register a slight increase during the last three years of the war period, but the increase is so slight that no marked tendency can be attributed to it. The increase in non-member deposits is a direct measure of the increased confidence that the village credit societies are inspiring in the minds of the investing public, but that the habit of thrift is being inculcated in the members in equal measure cannot unfortunately be said.

Loans outstanding against members too have been falling during the period, 1935-44. In 1944-45 the figure was Rs. 272·58 lakhs as against Rs. 344·54 lakhs in 1935-36 and Rs. 382·76 in 1940-41. In 1946-47 however, the figure rose to Rs. 444·58 lakhs. In 1948-49 it rose further to Rs. 659·12 lakhs. This fall is generally attributed to the wartime prosperity of the agriculturists and steady policy followed by the department in the reduction of overdues. Overdues which were as high as 69·6% of the demand during the year 1934-35 and ruled at 40·58% in 1939-40, were brought down to 22·34% in 1944-45. Still in absolute amount there was an overdue of nearly Rs. 141·24

lakhs in that year. By 1946-47, overdues increased to 31% of demand. Thereafter they have been ranging at a higher level.

The profit and loss account shows that the losses incurred by the loss societies were greater than the profits made by the other societies. Against a total loss by loss societies of Rs. 11·70 lakhs in 1946-47, the profits amounted to only Rs. 8·34 lakhs. Still the percentage that net loss bears to total working capital was only 0·5% which is less than the percentages for 1935-36 and 1939-40 of 3·0 and 3·4 respectively. In 1948-49 profits exceeded losses by a little.

On the whole it may be said that these societies, taken collectively, are doing at present sounder business and are stronger on the financial side than they were a decade ago.

The total of loans issued in 1948-49 by these village credit societies was higher than in any of the previous years, having been Rs. 496·10 lakhs against Rs. 167·18 and 167·16 lakhs in 1943-44 and 1944-45 and Rs. 147·29 lakhs, Rs. 144·72 lakhs and Rs. 175·77 lakhs in 1939-40, 1940-41 and 1941-42, respectively. These loans are usually classified as for three purposes, viz., productive, non-productive and discharge of prior debt. In 1948-49 loans for productive purposes amounted to Rs. 469·88 lakhs, for discharge of prior debt to Rs. 23·59 lakhs and for unproductive purposes such as marriages, other ceremonies and litigation to Rs. 2·63 lakhs. The following table gives the loans granted by these credit societies thus classified for the eight years, 1941-1949.

TABLE XXIX

| | Productive Purposes | | Discharge of Prior Debt | | Non-productive | | Total |
|---|---|---|---|---|---|---|---|
| | Amount Lakhs Rs. | Percentage to total | Amount Lakhs Rs. | Percentage to total | Amount Lakhs Rs. | Percentage to total | Amount Lakhs Rs. |
| 1941-42 .. | 128·06 | 72·8 | 42·14 | 23·9 | 5·57 | 3·3 | 175·77 |
| 1942-43 .. | 139·64 | 83·5 | 25·32 | 15·1 | 2·77 | 1·4 | 167·18 |
| 1943-44 .. | 153·36 | 91·1 | 11·58 | 6·9 | 2·22 | 2·0 | 167·16 |
| 1944-45 .. | 174·45 | 91·9 | 12·71 | 6·7 | 2·51 | 1·4 | 189·67 |
| 1945-46 .. | 242·37 | 91·17 | 20·63 | 7·76 | 2·85 | 1·07 | 265·85 |
| 1946-47 .. | 329·65 | 94·96 | 15·51 | 4·47 | 2·00 | 0·57 | 347·16 |
| 1947-48 .. | 414·70 | 94·23 | 23·60 | 5·37 | 1·71 | 0·40 | 440·01 |
| 1948-49 .. | 469·88 | 94·76 | 23·69 | 4·75 | 2·63 | 0·49 | 496·10 |

It is seen from the table that the percentage of loans for productive purposes has been steadily rising and those for the discharge of prior debt, and for non-productive purposes steadily falling. As comparable figures are not available for the prewar period, it is not possible to say whether the present situation marks an improvement on the prewar situation too. The figures given in the administration reports of Co-operative societies for years prior to 1941-42 pertain to agricultural societies and not to agricultural credit societies. Since however credit societies loom large among agricultural societies, there is reason to think that the position is better now than it was in the prewar period.

Another classification of these loans is on the basis of period, into short term and medium term loans. Since the inauguration of land mortgage banks, village societies have been confining their business to these two types of loans. Unfortunately administration reports of the Co-operative Department for the years 1940-41 to 1944-45 do not give figures or proportions relating to this classification, and it would be illegitimate to assume that the earlier proportions apply even now, when conditions have been so radically different. The figures and the proportions from 1937 to 1941 and for 1945-47 are given below:—

TABLE XXX

| Year | Medium term Rs. Lakhs | Short term Rs. Lakhs | Proportion of (3) to (2) |
|---|---|---|---|
| (1) | (2) | (3) | (4) |
| 1937-38 .. | 45·58 | 96·67 | 1: 0·47 |
| 1938-39 .. | 63·41 | 137·67 | 1: 0·46 |
| 1939-40 .. | 46·82 | 155·89 | 1: 0·30 |
| 1940-41 .. | 39·12 | 188·27 | 1: 0·21 |
| 1945-46 .. | 82·44 | 179·32 | 1: 0·45 |
| 1946-47 .. | 93·56 | 249·61 | 1: 0·37 |

(For the later years separate figures for credit societies are not available)

A third classification is on the basis of security offered. Unlike the Raiffeisen societies of Germany, village societies in India have been permitted, right from the beginning, to accept mortgage security for loans in addition to personal security. Whether this practice militates against the very spirit of Co-operation or not has been the subject of debate in many conferences, yet from consi-

derations of business success the practice has been continued without abatement. Thus in 1939-40, 42·15% of the loans given were on the security of immovable property and in 1940-41, 38·43%. What percentage such loans formed in later years is not known, as the administration reports do not give the relevant data separately for credit societies.

The rate of interest charged on loans at present ranges between 6¼% and 7½%, but in most societies it is nearer 6¼ than 7½. Since the prescription of a statutory rate of interest on loans given to agriculturists under the provisions of the Agriculturists Relief, Act, of 1938, co-operative societies in Madras, though they are exempt from the operations of the Act, have made a determined effort to keep down their lending rates to the statutory level. Most societies were not in a position to do this till 1946-47, when the lending rate of Central Banks was reduced from 5 to 4½%. In the opinion of Mr. S. A. Venkataraman,[3] sometime Registrar of Co-operative Societies in Madras, a margin of 2% is the irreducible minimum for the profitable working of a village society. This same reason is urged for the refusal of the Provincial Bank to avail of the offer made by the Reserve Bank to permit a reduction of 1½% on money advanced to the bank, if the bank and the other institutions concerned in their turn made an equal reduction to the ultimate borrower. Of course this refusal is based on a misunderstanding of the offer of the Reserve Bank, for what the Reserve Bank wants is not that co-operative institutions should work on a margin of 1½%, but that their lending rates should be reduced by 1½% on such of their loans as are financed by the Reserve Bank. Whatever be the misunderstanding and the difficulties involved in the acceptance of the Reserve Bank's offer, the point has received confirmation from all co-operators in the State that it is impossible to work a primary society on a margin of 1½%. So a widespread reduction of the lending rate to the statutory level depends on an anterior reduction of the borrowing rate, which the financing banks were not in a position to do till 1946-47. For nearly 80% of their financial needs, the primaries have still to look to the Central Banks for accommodation, and as long as they were unable to reduce their lending rate, a further reduction by the primaries in the rate charged to the ultimate borrower was impracticable.

The rate of interest in this State compares favourably with the rates charged in the other States of the country. Except

3. Report on the Working of Co-operative Societies, 1940.

Central Provinces, where the average lending rate is only 6%, all other States have higher rates, ranging from 9 to 12½% and even going as high as 25%. The ordinary lending rates of agricultural societies for the various States during the year 1947-48, the latest year for which statistics are published, are given below:

TABLE XXXI

Lending Rates of Agricultural Societies, 1947-48

| State | | Rate Percent |
|---|---|---|
| Madras | .. | 6¼ |
| Bombay | .. | 3 to 9⅜ |
| Bihar | .. | 6¼ to 25 |
| Orissa | .. | 8 |
| United Provinces | . | 9 to 12 |
| East Punjab | .. | 6¼ to 12½ |
| Central Provinces | .. | 6¼ to 12 |
| Assam | .. | 12½ |
| West Bengal | .. | 6¼ to 15½ |

For a 'deficit economy' such as agriculture in India is, even a 6¼% interest may appear to be an unprofitable rate. Profits in agriculture even when profits are made in good years, in the opinion of competent observers, do not as a rule exceed 4%, and when such is the case, loans taken for cultivation purposes at 6¼% interest can hardly be expected to provide for their own services. This realization has made the Economist who conducted the investigation into the rural debt of the State in 1945, to suggest that the statutory rate of interest should be lowered to 3%. As a practicable proposition this does not merit serious attention now, for its implication, from what has been said above, is that the borrowing rate of co-operative societies should be reduced to 1%. This is patently impossible. It should be remembered in suggesting or examining any such proposal that the rates actually operative in the economy are gross rates, and even if it is found possible to beat down the pure or net rate to the irreducible minimum required for invoking the needed lending, the other elements in the gross rate would offer a stiffer resistance. The sooner it is realized that there are limits to what may statutorily be done to keep down rates of interest, the sooner would attention and effort be directed to the employment of more effective measures. Rais-

ing the profitability of agriculture is an attractive alternative to lowering the rate of interest, and greater possibilities undoubtedly lay in that direction.

A special feature of the working of these societies in Madras is the system of 'controlled credit'. Co-operative credit is distinguished from other forms of credit by its being controlled, but the type of control which goes by that name in Madras is very different and has in it certain unco-operative elements. It was designed during the period of depression to solve the problem of of overdues and was conceived and executed as a purely business proposition. Started in the district of South Arcot in 1932 under the able guidance of an energetic Deputy Registrar, the system took sometime to receive the approval of co-operators in the State. But once its business effectiveness had been manifested, its extension into the other districts was rapid. In 1946-47 it operated in 19 districts of the State, comprehending 63 sales societies and 602 credit societies. In 1948-49 however it worked only in 14 districts. A special scheme of controlled credit has been introduced into the Ceded Districts where through the periodical visitation of famine conditions the problem of overdues has always been defiant of solution. But the most efficiently worked societies were in the district of Salem.

Under this scheme loans given by credit societies for cultivation purposes have the condition attached to them that the produce should be sold through the sale society to which the credit societies are affiliated. When the produce is thus sold, the sale proceeds are first utilized to repay the loan with interest to the credit society concerned, and the remainder only is handed over to the producer. Loans given under the scheme have all been quickly realized, and as a business method its efficacy remains unchallenged. But the element of compulsion inherent in it has, from the beginning, been an objectionable feature to true co-operators, and even to-day many active co-operators accord only lukewarm support to it. The Madras Committee on Co-operation, 1940, were reluctant to give it their unqualified approval and could bring themselves to recommend its adoption only as an experimental measure. But its business success commends itself to those who are in charge of societies and, as everywhere else, in Madras too, co-operative ideals recede before the advance of business considerations..

The foregoing account of the village co-operative credit movement shows that as a rural credit agency co-operation has come to stay in the land. Its achievements so far have not been spectacular,

but there can be no doubt that in the development of this movement lies 'the best hope of rural India'. At present in the State only 30% of the villages seem to have a credit society. There are only 13,740 societies for 35,837 villages having populations of less than 5,000. The membership of these societies forms only about 15% of the total number of rural families. The annual average amount of loans issued for the six years of the war period was Rs. 165·30 lakhs, which would roughly form about 3% of the annual short-term needs of agriculture.[4] It is clear therefore that at present these societies play a minor role in the direct supply of credit, though their general influence in toning up the rural credit system and reducing the rate of interest charged by other agencies cannot be denied.

While for the State as a whole only 30% of the villages have the benefit of a credit society, certain tracts and certain districts appear to be better served than others. Eight districts, viz., South Kanara, Coimbatore, Salem, Trichinopoly, Guntur, West Godavari, Kistna and the Nilgiris, have over 50% of their villages comprised in the movement, while Ramnad in the extreme south and Vizagapatam in the extreme north have only less than 20% of their villages thus affected. The table[5] below gives details regarding the strength of the movement in the different districts of the State.

TABLE XXXII

| District or Districts | Percentage of villages included in the movement |
|---|---|
| S. Kanara, | Above 60% |
| Coimbatore, Salem, Trichinopoly, Guntur, W. Godavari, Kistna, and the Nilgiris | Between 50 and 59% |
| Malabar, N. Arcot, Madura, Tinnevelly, Bellary, Anantapur and Chingleput | Between 40 and 49% |
| S. Arcot, Tanjore and Kurnool | Between 30 and 39% |
| Chittoor, Nellore, Cuddapah and E. Godavari | Between 20 and 29% |
| Ramnad and Vizagapatam | Below 20% |

In the financial strength of these societies and their working efficiency too, wide variation is seen as between districts. Thus,

4. Mr. W. R. S. Sathianathan placed it at 6% in 1935.
5. Taken from the Report on the Working of Co-operative Societies, 1940.

for instance, in the percentage of collections to demand (principal) the variation is between 70 and 25. While it is above 70% in South Kanara, it is below 25% in Malabar, S. Arcot, Chingleput, Chittoor, Cuddapah, Kurnool, Bellary and Anantapur. The following table[6] gives details of percentages for all the districts.

TABLE XXXIII

| District or Districts | Percentage of collection to demand (Principal) in Agricultural Credit Societies |
|---|---|
| S. Kanara .. | Above 70% |
| Salem, Coimbatore, Trichinopoly, Tinnevelly, Kistna, W. Godavari and E. Godavari .. | Between 50 and 70% |
| Vizagapatam, Guntur, Nellore, N. Arcot, Tanjore, Madura, Ramnad and the Nilgiris .. | Between 25 and 50% |
| Malabar, S. Arcot, Chingleput, Chittoor, Cuddapah, Kurnool, Bellary and Anantapur .. | Below 25% |

Among the districts South Kanara seems to lead in every aspect of the credit movement. As has been seen already, she has the largest percentage of villages included in the movement and her percentage of annual collections to demand also exceeds the percentage in any other district. In addition, she has absolutely the largest number of A class societies in the State. In 1940 and 1941 for which detailed figures are available, she had 18 and 20 societies respectively placed in A class out of 130 and 114 societies audited. These figures relate to the year 1940-41 and may not be truly representative of the existing state of affairs. But information on these points for the later years is not available.

Among the States of India, Madras yields only to undivided Bengal and the Punjab in the number of credit societies or the membership of such societies. In the matter of loans issued during the year, she leads, and in the amount of working capital she is second only to Bengal. In the amount of member-deposits she takes the fourth rank, with Bengal, the Punjab and Bombay above her. Figures relating to these items for some of the States are given in table XXXIV.

6. Taken from the Report on the Working of Co-operative Societies, 1940.

TABLE XXXIV

Agricultural Societies, 1947-48

| State | Number of societies | Membership | Loans issued during the year to individuals Rs. | Member deposits Rs. | Working capital Rs. |
|---|---|---|---|---|---|
| Madras | .. 13514 | 1191146 | 64728208 | 2059995 | 106469316 |
| Credit Societies | .. 12056 | | | | |
| Bombay | .. 6418 | 584404 | 45792366 | 4188750 | 59433837 |
| Credit Societies | .. 5764 | | | | |
| W. Bengal | .. 11480 | 296446 | 2782170 | 444793 | 12011014 |
| Credit Societies | .. 9447 | | | | |
| U. P. | .. 27542 | 969911 | 16324354 | 1152685 | 2043823 |
| Credit Societies | .. 19696 | | | | |
| E. Punjab | .. 11614 | 601790 | 5104299 | 7935971 | 1735290 |
| Credit Societies | .. 8419 | | | | |

Relatively to the other States of the country the village credit societies of Madras give a good showing and work as efficiently and serve their clientele with as much benefit as societies elsewhere, but compared with the needs they are intended to meet, it has to be admitted that they fall short of the mark. The fact that the large majority of them belong to class C and a considerable number to Class D is a most disquieting feature and unmistakably indicates that a great deal of unreality attaches to the state of affairs as revealed by statistics. The problem of overdues has ever been a canker eating at the vitals of the co-operative structure, and its persistence, in spite of the sustained endeavour to eradicate it, shows how even after war-born prosperity many societies still await rectification. Many factors have contributed to this result, but among them special emphasis shoud be laid upon the lack of training and understanding of co-operative principles, the indifference of panchayatdars, lack of proper supervision, lack of proper attention to the granting of extensions, lack of scrutiny of the purpose of the loans or the repaying capacity of the borrower, failure to take prompt steps for the recovery of overdues and the

insufficient interest taken by members in the working of societies. These inherent weaknesses of the Co-operative movement offer a greater threat to its prosperity than external circumstances. As the Madras Committee on Co-operation, 1940, have said, " the existence of a fairly large number of moribund or bad societies is a bar to the progress of new schemes designed to widen the scope and utility of Co-operative organizations and the diffusion of Co-operative activities in the country side." [7]

The primary need is therefore for rectification of existing societies. Mere multiplication of the number of societies, but with the certain prospect of many of them becoming dormant in the course of a year or two, hardly contributes to an increase in the popularity of the movement or in the appeal it has to the poor and needy agriculturists. A few good societies, well organized and well-managed and radiating the true spirit of co-operation all round, do more to convey the message of self-help and economic and moral rehabilitation to the country side than a multiplicity of ill managed societies having a dragging existence. Nevertheless, as the Madras Committee on Co-operation, 1940, have said, any new orientation of agricultural credit should proceed on parallel lines; the reconstruction of existing societies and the execution of a plan of expansion, both intensively and extensively. The credit problem in agriculture demands urgent attention and can scarcely wait upon the leisurely pace of reconstruction, consolidation and slow expansion. The restriction placed on the moneylenders' activities and the relief from debt afforded by legislative enactments have tended to dry up the sources of credit in rural areas, and unless the co-operative movement immediately offers an alternative, but more efficient, agency to fill up the gap, the agriculturists of the State will be submitted to untold suffering. The thousands of villages scattered throughout the State which now do not have a co-operative society, should have the benefit of co-operative credit extended to them in the shortest possible time, if the forward movement in agricultural development which post-war planning contemplates is to be brought within the range of practicability.

The Madras Committee on Co-operation, 1940, after a thorough study of the situation, have recommended a variety of measures designed to further the movement. Their proposals visualize both an intensive and extensive development, intensively to more efficiently meet all the multifarious needs of the members and exten-

7. Report, p. 133.

sively to bring within its fold every village of the State. For intensifying the activities of the societies, their suggestions are the conversion of single purpose societies into multi-purpose societies, the replacement of unlimited by limited liability and the adoption of the policy of full finance, based on the principle of 'voluntary compulsion.' Extensively every village is to be reached by starting multi-purpose societies for each, or if the villages are small, for a group, and through intensive propaganda and education to bring into the society as many families as possible. Compulsory Co-operation a proposal made to the Committee, under which every family in the village where a society is established, will be compelled to join it, though favoured by a minority of the members, is rejected by the majority as being a contradiction in terms and altogether foreign to the spirit of co-operation. Instead they put their trust on the slower, but surer, processes of propaganda and education to awaken the conscience of the village folk.

These proposals, some of which are highly controversial, have been the subject of debate among co-operators for some years now, and still exist in a stage of inconclusiveness. The multi-purpose society idea was rejected by the Government, as much of authoritative opinion appeared to be against it and a real fear existed that it would be difficult to secure competent men to run such societies. As the Registrar of Co-operative Societies, 1940, observed, "the development of trained business capacity must precede the launching of a drive to widen the scope of primary societies." [8] At present, as the same Registrar remarked "panchayatdhars and members of primary societies are, to a disquieting extent, Co-operative illiterates." In spite of this decision, circumstances have compelled the societies to widen their activities as permitted by existing rules and by-laws, and carry out seed and manure distribution under the Grow More Food Campaign. The Madras Post-War Development Committee on Co-operation, 1945, too have made the recommendation that for the successful working of primary societies their scope of activity should be widened. And the suggestion made by one of the Registrars is that they should be elevated to the position of Rural Banks catering to the needs of a group of villages. Thus opinion seems to be gradually swinging towards an expansion of their activities, if not into the non-credit field, at least in the credit field itself. The example of the United Provinces too where quite a number of multi-purpose societies are successfully working, adds strength to this demand

8. Report, 1940.

Any widening of their activities or area of operation will compel the adoption of limited liability in place of unlimited liability. The two questions really hinge upon one another and will have to be decided in relation to each other. But whatever be the final decision with regard to these two questions, the immediate need exists for the adoption of the third suggestion, viz., full finance. The widespread complaint against the working of these credit societies is that they do not cater to the full credit needs of members and so are incapable at present to wean them away from their affiliations with the moneylenders. The average loan granted per member is only about Rs. 62·9 which admittedly is insufficient to meet the annual credit needs of members. Further, frequent complaints are heard regarding the long delay in the grant of loans, the inadequacy of the loan sanctioned even for the purpose approved, the partial treatment meted out to some sections of the membership, the uncertainty attaching to all such transactions and the general mis-management of the affairs of the society. While some of these evils depend for their eradication on the raising of the level of co-operative morality, those which impinge more sharply on the economic activities of members may be remedied by the adoption of a policy of full finance.

Under this policy, members will have to give an undertaking that all their borrowings will be confined to the society, and the society in its turn should, within limits, keep itself in readiness to supply all their credit needs. To make the system efficacious enough to be serviceable, the system of forecast loans should be combined with it. That would on the one hand, eliminate the red tape which at present avoidably detracts from the usefulness of co-operative finance and, on the other, help the member to get an over-all picture of his annual financial operations and apply restrictions, wherever necessary, and enable the society to exercise some kind of control over members' finances. The relationship between the member and the society will become closer and in time more cordial, and the mutual supervision and helpfulness which Co-operation is designed to foster will become a reality.

Since writing the above, the Government have passed orders in G. O. No. Mis. 5613/Dev. Dept. dated 12-11-1949 accepting the multi-purpose society idea and directing the Registrar of Co-operative Societies to take measures to convert existing rural credit societies into multi-purpose societies. The order visualizes the conversion of all rural credit societies within a period of two years and the expansion of their activities as provided in existing by-laws. The inauguration of more such societies too, to serve at least

50% of the villages and 30% of the population within the prescribed period, is urged. To enable the carrying out of this work, the Government have sanctioned the appointment of two supervisors to be placed in reserve in the service of each Central Bank, the cost involved to be met by Government, and a grant of Rs. 1,27,020 per year for two years for the payment of subsidies to Central Banks.

In accordance with this order, the Registrar has issued instructions to his subordinates to more intensively supervise the societies, reconstruct dormant societies and start other activities in credit societies. Financing of crop production, acting as agent for the sale of the crop to the nearest co-operative marketing organization, supplying the farmers' needs, such as seed, cattle feed, fertilizers, implements, consumers, goods, collection of milk to be sent to the nearest dairy, rendering first aid to animals, maintaining stud bulls, maintaining agricultural machinery for joint use, encouraging subsidiary occupations, are some of the activities recommended. To effectively safeguard supervision, the supervisor's radius of operation is reduced to 5 to 6 miles and the number of societies under his charge to twenty. Side by side with the conversion of existing societies, attempts are to be made to bring 50% of the families in each village into the society. Special Development Officers, Assistant Development Officers and Rural Welfare Officers are to be in charge of this work, and they are expected to carry out their ameliorative work through these societies.

*Higher Financing Organization — District Central Banks*: The higher financing organization in the State comprises the District Central Banks and the Provincial Co-operative Bank. Modelled more or less on the superior or higher financing organization of Germany, these institutions were started very early in the development of Co-operation. The inadequacy of deposits gathered by the primary societies and the unwillingness of the Government or existing banks to shoulder the responsibility of financing societies led to the need for forming special institutions solely devoted to that task. The first institution of the kind was started in 1905 in Madras City as the Madras Central Urban Bank for the purpose of financing all the societies of the State. It was soon realized however that the State was too large an area for one bank to manage and that efficient management and the tapping of local resources required a certain measure of decentralization. The first District Bank was formed in 1909 in Salem, and other districts soon imitated the example. There are now 31 district Central Banks with a bank for each district, some of the larger districts having more than one. Vizagapatam, Kistna and Tanjore have two banks each,

and East Godavari, four. The Coimbatore Central Bank serves both Coimbatore and the Nilgiris and the Kistna (Masulipatam) Central Bank covers four taluks of the Kistna district and one taluk of West Godavari. Since the inauguration of these district banks, the Madras Central Urban Bank has been converted into the Provincial Apex Bank. For special societies, such as labour societies and fishermen's societies, a separate bank known as the Madras Christian Central Bank was organized, but it has gone into liquidation since.

The Central Banks are of the federal type, the bulk of the shares being held by the primary societies of the district. Individuals also are permitted to hold shares, but the tendency in recent years has been to eliminate them and confine membership to societies. This process, begun sometime back, has not yet been completed, as informed opinion is in favour of retaining the individual members so as to secure for the management of the bank the wisdom and experience of interested individual co-operators. Nevertheless society membership predominates, and nearly 2/3 of the seats on the Board of Management are reserved for them. Individual directors are in most banks elected by the General Body of individual share-holders and affiliated societies.

The administration of each bank is vested in the Board of Management and an Executive Committee to which the Board delegates powers. The day to day management of the bank is in the hands of the Secretary, a full-time paid officer, assisted by paid accountants and clerks.

The main function of these banks is to gather and centralize the resources of the district and make loans to primary societies. In exercising this function the need has been felt to have some control over the working of the societies, and so at present, most central banks inspect and supervise societies affiliated to them. Their resources consist of share capital, deposits from individuals (members and non-members), reserve and other funds and loans and overdrafts from the Provincial Bank and other institutions. Till recently the surplus funds of local bodies formed a considerable portion of their finances, but latterly certain restrictions have been placed on local bodies by Government in the matter of depositing their funds with Central Banks. A limit of ten times owned capital is placed on the borrowing permissible to these banks, to limit their liabilities and safeguard the interests of the depositors. They are also required to maintain a portion of their deposits in liquid form.

Their loan business is mainly with primary societies, but occasionally they advance money to member and non-member depositors on the security of deposits. The loans given to primary societies fall into two classes, short term and medium term, still called long term from old association.

In 1948-49, the latest year for which statistics are available, there was a society membership of 16,308 in the 31 Central Banks of the State. Their total working capital amounted in that year to Rs. 1,744·56 lakhs which was higher than in any other State of India. The total of loans made during the year to banks and societies amounted to Rs. 4743·61 lakhs and loans outstanding against them amounted to Rs. 1296·93 lakhs. Individual deposits were Rs. 526·97 lakhs and society deposits, Rs. 432·05 lakhs, showing that very nearly half of the funds were raised inside the movement. Share capital and Reserve Fund were Rs. 104·46 lakhs and Rs. 52·08 lakhs respectively. The ordinary borrowing rate was 3% and lending rate 4½%. Total profits came upto Rs. 20,24,755.

Society members have been steadily increasing since 1938-39, largely as a result of the large number of consumer's stores opened. And compared with the prewar period loans to societies have increased to a surprising extent. While in 1938-39 short term loans to banks and societies amounted only to Rs. 3·6 crores, in 1948-49 they were as high as Rs. 47·43 crores. Most of this increase has to be attributed to the development of non-credit co-operation and the large demand for funds made by the newly formed co-operative stores. In fact, the breach caused by the fall in the demand for funds during the war period from village credit societies was more than made up by these stores. To meet this situation, the maximum credit limits of some of the Central Banks have been raised by the Registrar. The total of loans, made in 1948-49 indicates a turnover of 2·7 for the working capital of Rs. 17·5 crores, and in this respect too the war period and the postwar period mark a change from the pre-war position. In 1938-39 the total of loans was Rs. 3·6 crores against a working capital of Rs. 5·6 crores which shows that full employment could not be found for all the funds available with the banks. Partly as a result of this and partly as a measure of safety it has been usual with these banks to invest a certain percentage of their deposits in Government securities. During the war period, subscriptions were freely made to the Defence Loans. But the percentage got reduced during the war period, from 35·32% of deposits in 1939-40 to 16·53% of deposits in 1944-45 and further

to 12·3% in 1948-49. The latter percentage is less than the standard prescribed by the Reserve Bank, viz., 30 to 40% of deposits, but the overhelming demand for funds coming from the movement itself had to be met.

The larger turnover of working capital during the last three years of the war period and subsequently in the post-war years has to be attributed to the larger proportion of short-term loans to total loans and the increased share of non-credit societies in them. From 1942-43 onward total of loans has been in excess of the total of working capital, and long-term loans have been a dwindling percentage of total loans. The relevant figures for the years, 1938-49, are given below.

TABLE XXXV

| | Working capital | Short-term loans | Long-term loans | Total loans | Percentage of long-term loans to total loans |
|---|---|---|---|---|---|
| | Lakhs Rs. | Lakhs Rs. | Lakhs Rs. | Lakhs Rs. | |
| 1938-39 .. | 566·24 | 309·44 | 65·35 | 374·78 | 17·4 |
| 1939-40 .. | 580·30 | 351·83 | 59·09 | 410·92 | 14·3 |
| 1940-41 .. | 595·10 | 408·77 | 40·80 | 449·56 | 9·0 |
| 1941-42 .. | 614·03 | — | — | 499·06 | — |
| 1942-43 .. | 673·15 | 662·68 | 43·03 | 705·71 | 6·0 |
| 1943-44 .. | 750·54 | 1118·72 | 32·29 | 1151·01 | 2·8 |
| 1944-45 .. | 850·33 | 1589·90 | 44·75 | 1634·74 | 2·1 |
| 1945-46 .. | 997·52 | 1833·08 | 80·33 | 1963·41 | 1·9 |
| 1946-47 .. | 1384·26 | 3180·98 | 96·61 | 3267·59 | 2·3 |
| 1947-48 .. | 1406·96 | 3190·59 | 128·88 | 3314·47 | 3·9 |
| 1948-49 .. | 1744·56 | 4616·41 | 127·21 | 4743·62 | 2·7 |

Loans outstanding against individuals and societies at the end of 1948-49 amounted to Rs. 1313·15 lakhs against a lending during the year of Rs. 4743·62 lakhs. This goes to show that a great part of the short-term loans raised by individuals and societies were repaid during the year. In 1938-39 in striking contrast to this, loans outstanding at end of the year were in excess of the loans made during the year. Loans outstanding were of the amount of Rs. 419 lakhs against a lending during the year of Rs. 375 lakhs. Thus an improvement is noticeable in the loan

position of the banks, overdues are getting reduced and quicker repayment of loans made is being effected. This doubtless has had the effect of strengthening and enlarging the financial resources of the banks and extending their usefulness. The figures relating to loans made during the year and loans outstanding at the end of the year for the years 1938 to 1949 are given below.

TABLE XXXVI

| | Loans made during the year to (Lakhs) | | | Loans outstanding at end of the year against (Lakhs) | | |
|---|---|---|---|---|---|---|
| | Individuals | Societies | Total | Individuals | Societies | Total |
| 1938-39 .. | 18 | 357 | 375 | 7 | 412 | 419 |
| 1939-40 .. | 18 | 383 | 401 | 9 | 415 | 424 |
| 1940-41 .. | 11 | 439 | 450 | 6 | 422 | 428 |
| 1941-42 .. | 14 | 486 | 500 | 7 | 408 | 415 |
| 1942-43 .. | 17 | 706 | 723 | 5 | 406 | 411 |
| 1943-44 .. | 14 | 1151 | 1195 | 5 | 468 | 473 |
| 1944-45 .. | 17 | 1635 | 1652 | 6 | 558 | 564 |
| 1945-46 .. | 21 | 1942 | 1963 | 10 | 696 | 706 |
| 1946-47 .. | 21 | 3246 | 3267 | 14 | 942 | 956 |
| 1947-48 .. | 37 | 3315 | 3352 | 14 | 1002 | 1016 |
| 1948-49 .. | 35 | 4744 | 4779 | 16 | 1296 | 1312 |

The figures show that individual borrowing forms an insignificant portion of the banks' loan business, and further, that normally loans outstanding against individuals are lower in amount than the borrowing effected by them during the year. For societies on the other hand this last feature is noticeable only from 1942-43. The amount of loans outstanding has remained fairly steady for all the years, 1938-43, but jumped up by nearly Rs. 90 lakhs in 1944-45, by nearly Rs. 104 lakhs in 1945-46 and by Rs. 250 lakhs in 1946-47. Further increases were by Rs. 60 lakhs in 1947-48 and by Rs. 296 lakhs in 1948-49. There is perhaps the indication here that comparatively less improvement has taken place in the banks' loan business with credit co-operatives, but that the improvement is almost entirely to be attributed to the new business with consumers' stores and other non-credit societies.

The total of loans and deposits held by the banks at the end of the year from all sources amounted in 1946-47 to Rs. 1585·38 lakhs. This amount is seen to be higher than in any year since 1938-39. After a set back in this amount from Rs. 492 lakhs in

1938-39 to Rs. 465 lakhs in 1939-40, there has been steady improvement in the subsequent years. These amounts for all the years, 1938-49, are given in the table below:—

TABLE XXXVII

| | Loans and Deposits held at end of the year from | | | |
|---|---|---|---|---|
| | Societies | Provincial and Central Banks | Individuals and other sources | Total |
| | (lakhs) | (lakhs) | (lakhs) | (lakhs) |
| 1938-39 .. | 131 | 68 | 353 | 492 |
| 1939-40 .. | 135 | 95 | 235 | 465 |
| 1940-41 .. | 143 | 106 | 228 | 477 |
| 1941-42 .. | 167 | 81 | 247 | 496 |
| 1942-43 .. | 201 | 47 | 307 | 555 |
| 1943-44 .. | 220 | 65 | 342 | 627 |
| 1944-45 .. | 241 | 87 | 389 | 717 |
| 1945-46 .. | 304 | 97 | 452 | 853 |
| 1946-47 .. | 457 | 300 | 468 | 1225 |
| 1947-48 .. | 385 | 252 | 490 | 1127 |
| 1948-49 .. | 432 | 616 | 537 | 1585 |

In 1940, according to the Madras Committee on Co-operation, deposits formed 82% of liabilities and 67% of working capital. In 1948-49 they formed 61% of liabilities and 55% of working capital. Individual deposits have been a more important source of finance than any other in all the years. In the pre-war year, 1938-39, deposits from individuals exceeded all other sources of finance, but during the war years, society deposits and loans from provincial and central banks have been relatively rising. Individual deposits fell from Rs. 358 lakhs in 1938-39 to Rs. 228 lakhs in 1940-41, and thereafter rose steadily to Rs. 389 lakhs in 1944-45. Society deposits on the other hand are seen to have risen steadily. There is reason to think that the rise in society deposits is due to the growth in the share capital, reserve and other funds of primaries which are usually deposited with Central Banks. This means that the financial position of the primary societies too has experienced a parallel improvement. Borrowing is usually from the Provincial Co-operative Bank or the Imperial Bank as cash credit or overdraft on the security of Government or Co-operative paper.

The lending rate of interest which was in most of the war years 5½%, was in 1944-45 brought down to 5%, the level which

prevailed in 1938-39. In 1946-47 it was further reduced to 4½%. This rate is lower than the rate charged by Central Banks or Banking Unions in the other States of India. While it is as high as 6½ to 12½% in West Bengal, 9% in the United Provinces and ranges between 2 and 10½% in East Punjab, it is a matter of satisfaction that it is as low as 4½% in this State. Even Bombay which is a comparatively richer State, has an average rate of 6%. In the amount of loans made to primary societies too Madras leads among the States of India. So also, society deposits are higher in Madras than anywhere else, and in the matter of individual deposits, she is second only to Bombay.

The problem of overdues which was the most difficult problem facing the Central Banks during the depression years and for some years thereafter, was more or less successfully solved during the war period. That period witnessed a steady improvement in the situation, and both under principal and interest substantial reductions in overdue payments were made. From 42·21% in 1938-39, they were brought down to 13·88% in 1943-44. A further reduction to about 7·6% took place in 1944-45. Bad and doubtful debts also were reduced from Rs. 6·80 lakhs in 1938-39 to Rs. 5·67 lakhs in 1944-45. Subsequently they have increased to Rs. 17 lakhs in 1948-49. Figures relating to overdues for the years 1938-49 are given below: —

TABLE XXXVIII

Overdues—Percentage to Demand

| | Under Principal | | Under Interest | | Percentage, overdues of all kinds |
|---|---|---|---|---|---|
| | Medium term | Short term | Arrear | Current | |
| 1938-39 .. | 56·21 | 25·20 | 47·31 | 9·08 | 42·21 |
| 1939-40 .. | 52·76 | 22·85 | 40·41 | 8·32 | 35·35 |
| 1940-41 .. | 55·15 | 17·20 | 35·25 | 7·38 | 33·03 |
| 1941-42 .. | 47·86 | 16·83 | 47·22 | 6·85 | 26·75 |
| 1942-43 .. | 49·73 | 8·31 | 49·58 | 4·66 | 18·44 |
| 1943-44 .. | 39·18 | 6·22 | 61·62 | 1·53 | 13·88 |
| 1944-45 .. | 6·99 | | 45·82 | 0·70 | — |
| 1945-46 .. | 6·22 | | 51·69 | 0·48 | — |
| 1946-47 .. | 5·20 | | 77·57 | 0·82 | — |
| 1947-48 .. | 5·05 | | 73·06 | 0·52 | — |
| 1948-49 .. | 5·27 | | 71·64 | 0·26 | — |

The foregoing analysis of the operations of Central Banks during the war years shows that they have been successfully dis-

charging the functions for which they were designed, viz., the tapping of local savings and the centralization and balancing of funds made available to the co-operative movement. Their management has been efficient and carried out at a minimum cost of not more than 1·5% of working capital. On a 1½% margin between the borrowing and lending rates they have succeeded in meeting all their management costs and building up a Reserve Fund which in 1948-49 amounted to nearly Rs. 52 lakhs. As the Madras Committee on Co-operation, 1940, observe, they have all along been guided in their operations by sound banking principles and have built up a tradition for safe business. These banks were thus enabled to weather the storm of the depression years when financially stronger banks were compelled to suspend payments. The only case of a Central Bank having gone into liquidation in the State is that of the Madras Christian Central Bank, but the cirsumstances under which it worked were peculiar. The Central Banks of the Ceded Districts occasionally have bad times when droughts visit the areas, still even they have so far succeeded in keeping themselves above board.

In these circumstances a case can hardly be made out for implementing the suggestion placed before the Madras Committee on Co-operation, 1940, for converting these banks into branches of the Provincial Bank or the one made by the Reserve Bank in its statutory Report and Bulletin No. 1, of inaugurating Banking unions with smaller areas of operation to replace them or supplement their activities. The Madras Committee adverted to above, examined both proposals in detail and rejected both on the ground that neither marked an improvement on the existing position. In their view their conversion into branches of the Provincial Bank would neither cheapen credit to the ultimate borrower nor increase efficiency of management, but would on the other hand kill local interest and enthusiasm, eliminate the intimate contact between Central Banks and affiliated societies subsisting now and remove the flexibility which characterizes it, expose the provincial bank to concentrated shocks and obliterate the traditions built up over 36 years of co-operative practice. In similar strong language they deprecate the Reserve Bank's suggestion too as not conducive to the provision of cheap credit or efficient management.

On the loan and deposit policy of the banks, the Committee's suggestions or recommendations are that medium term loans, extending upto a period of 5 years ordinarily and 7 years in exceptional cases, should be more freely made, that a strict adherence to the commercial banking principle of financing medium term

loans with long period deposits need not be made, and that deposits ranging from one to three years should be encouraged to supplement the long period funds they have at their disposal.

On the whole they are satisfied that the Central Banks of the State have established a position of great security and serviceableness in the movement and would be capable of enlarging their usefulness when the contemplated expansion of the movement takes place.

In addition to the supply of finance to the primary societies Central Banks in this State have also undertaken the inspection and supervision of societies. They have organized administrative sections or committees of supervision for assisting and co-ordinating the work of supervising unions and controlling the supervising staff. This additional work, not originally contemplated when the banks were started, largely devolved on them as a result of the inefficiency of the supervising unions designed for the purpose. In their own financial interests the banks were willing to discharge this function, but the general opinion among co-operators appears to be that financial considerations outweigh others in this work of theirs, and so from the point of view of the higher ideals of co-operation the banks should be relieved of this duty. There is a great deal of truth in this criticism, but the banks are unwilling to loosen their hold on the primaries, without making sure of an alternative agency which will inspire their confidence.

But it is not only as a financing and inspecting agency that the Central Banks direct the co-operative movement of the districts. They serve as the focal point of co-operative endeavour, and with the abolition of the District Federations, they have virtually become the sole district organizations for sponsoring, financing, directing and otherwise aiding all new attempts in the districts. There is hardly a thing done in the co-operative field on which the Central Banks do not have their say, or hardly anything which can thrive without their benediction and stamp of approval.

*The Provincial Co-operative Bank*: The Madras Central Urban Bank was converted into the Provincial Apex Bank in April, 1917 on the recommendation of the Maclagan Committee. In the beginning any co-operative organization, even a primary society, was permitted to take shares in it, but in 1919, it practically became a federation of Central Banks with some individuals also as shareholders. The shares held by primary societies were transferred to the respective Central Banks.

At present there are 167 individuals as preference shareholders and 31 Central Banks as members. The preference shareholders have a preference right to dividend upto 9%. The Board of Management consists of representative of Central Banks, each bank having one representative, and 5 individual share holders elected from among themselves at a general meeting of both ordinary and preference shareholders.

The executive administration of the bank is carried out by a committee of 9 members, 6 of whom must be representatives of Central Banks. Each director has a term of office of three years.

Its main function is to serve as a balancing centre for the funds of the co-operative movement and to control the lending and borrowing rates of Central Banks. This it discharges through regularly lending money to Central banks as cash credit against Government and Co-operative paper. In 1948-49 loans thus made amounted to Rs. 784·34 lakhs. At the end of the same year loans outstanding against banks and societies amounted only to Rs. 483·26 lakhs, which shows that Central Banks have for the most part needed only short period accommodation. The total working capital at the disposal of the bank during the year amounted to Rs. 856 lakhs, made up of Rs. 14·64 lakhs of share capital, Rs. 54 lakhs of reserve and other funds and Rs. 787 lakhs of loans and deposits. Society deposits amounted to Rs. 78 lakhs, deposits from Central Banks to Rs. 102 lakhs and from individuals and other sources to Rs. 607 lakhs. Figures relating to loans given during the year, loans outstanding at the end of the year, loans and deposits from all sources, share capital, reserve and other funds and total working capital for all the years, 1938 to 1949, are given in table XXXIX.

TABLE XXXIX In thousand rupees

| | Loans given during the year to | | Loans outstanding at end of the year against | |
|---|---|---|---|---|
| | Individuals | Banks and Societies | Individuals | Banks and Societies |
| 1938-39 .. | 1031 | 7793 | 499 | 9849 |
| 1939-40 .. | 614 | 11394 | 511 | 12743 |
| 1940-41 .. | 529 | 13635 | 297 | 13287 |
| 1941-42 .. | 1407 | 14066 | 335 | 10982 |
| 1942-43 .. | 1066 | 6330 | 308 | 4986 |
| 1943-44 .. | 1387 | 16133 | 210 | 6352 |
| 1944-45 .. | 1065 | 16225 | 512 | 7529 |
| 1945-46 .. | 1283 | 14300 | 451 | 6038 |
| 1946-47 .. | 2989 | 43000 | 763 | 27204 |
| 1947-48 .. | 1426 | 43905 | 442 | 23628 |
| 1948-49 .. | 2175 | 75246 | 657 | 49326 |

In thousand rupees

| | Loans and deposits held at the end of the year from | | | Share capital | Reserve fund | Other funds | Working capital |
|---|---|---|---|---|---|---|---|
| | Societies | Provincial and Central Banks | Individuals and other sources | | | | |
| 1938-39 .. | — | 6003 | 14213 | 656 | 1750 | 1023 | 23645 |
| 1939-40 .. | — | 6535 | 16321 | 666 | 1825 | 1145 | 26491 |
| 1940-41 .. | — | 8303 | 15843 | 667 | 1900 | 1232 | 27945 |
| 1941-42 .. | 1732 | 8950 | 14467 | 670 | 1975 | 1357 | 29152 |
| 1942-43 .. | 2879 | 10984 | 15365 | 671 | 2025 | 1703 | 33627 |
| 1943-44 .. | 3639 | 8141 | 15448 | 670 | 2050 | 2039 | 31987 |
| 1944-45 .. | 4156 | 8321 | 15554 | 682 | 2150 | 2241 | 33104 |
| 1945-46 .. | 4185 | 12371 | 18541 | 682 | 2250 | 2282 | 40311 |
| 1946-47 .. | 3660 | 12336 | 25246 | 696 | 3350 | 1326 | 59613 |
| 1947-48 .. | 8825 | 9386 | 37844 | 898 | 3500 | 1362 | 67875 |
| 1948-49 .. | 7829 | 10225 | 60679 | 1464 | 4150 | 1207 | 85553 |

Loans given to Central Banks have been steadily increasing except during 1942-43 when there was a sliding down. But loans outstanding against them increased during the early years of the war period and then started declining. Since 1944-45 however there has been a perceptible increase. Deposits from Central Banks steadily increased from 1939 to 1943, but declined during the next two years. In the post-war years, however, increases have been registered. Deposits from individuals and other sources fluctuated between Rs. 142 lakhs and Rs. 163 lakhs during the war years, but increased to Rs. 417 crores in 1948-49. Loans outstanding against individuals and Central Banks formed only about 63% of total borrowing, and cash on hand represented 2·83%. The rest of the funds had to find investment in Government securities. In fact this seems to have been a normal feature of the bank, investments in Government securities for exceeding the proportion suggested by the Reserve Bank. They formed 58·4%, 62% and 60·92% of total deposits in 1938-39, 1943-44 and 1944-45 respectively. In 1948-49 the percentage was down at 34·17%. In spite of the increase in loan business due to the growth of stores, the problem of surplus has persisted.

Inside funds have been steadily increasing, forming an increasing percentage of working capital. From Rs. 84 lakhs in 1938-39 they increased to Rs. 182 lakhs in 1942-43, but decreased to Rs. 174 lakhs in 1944-45. In 1947-48 and 1948-49 they have been abso-

lutely higher, but in the latter year they found only 29% of working capital. The relevant figures are given below.

TABLE XL

| | Inside funds Rs. Lakhs | Working capital Rs. Lakhs | Percentage of 1 to 2 |
|---|---|---|---|
| 1938-39 .. | 84·0 | 236 | 35 |
| 1939-40 .. | 101·0 | 265 | 38 |
| 1940-41 .. | 120·9 | 279 | 42 |
| 1941-42 .. | 145·9 | 292 | 49 |
| 1942-43 .. | 182·4 | 336 | 54 |
| 1943-44 .. | 166·0 | 320 | 50 |
| 1944-45 .. | 174·0 | 331 | 52 |
| 1945-46 .. | 219·0 | 403 | 54 |
| 1946-47 .. | 214·0 | 596 | 35 |
| 1947-48 .. | 240·0 | 618 | 38 |
| 1948-49 .. | 250·0 | 856 | 29 |

The average borrowing rate has all along the war period been 2% and the lending rate, 3½%. In 1945-46 the lending rate was reduced to 3%. This margin of 1% has been found sufficient to meet operating expenses and yield an average dividend on shares of 9%.

Among the Provincial Banks of the country, the Madras Bank occupies a strong position. Its working capital in 1947-48 was larger than any other Provincial Bank's capital, with the exception of the Bombay Bank. Its reserve fund has been the largest, and in the amount of loans made to banks and societies, it stood second in rank in India. Its borrowing rate on the average has been lower than anywhere else.

Financially the Bank in Madras has been very sound, and to a large extent it has been due to the able management of the Board of Directors. The bank has been fortunate from its inception in having on its management, individuals keenly interested in the success of co-operation. It has attracted outside funds to such an extent as to create the problem of the surplus, though occasionally during periods of stringency it has been compelled to borrow from the Imperial Bank. The accommodation offered by the Reserve Bank of India under stipulated condition has not been availed of, as the Bank has felt that those conditions were too onerous to be fulfilled. The real reason perhaps was that the need for seeking such accommodation did not arise.

In recent years the Bank has been giving subsidies to Central Banks for the rectification and reconstruction of credit societies and the development of marketing societies. In 1948-49 a few central banks defaulted, for the first time for several years, in the repayment of their loans. But after the close of the co-operative year, the overdues were fully collected.

*Co-operative Land Mortgage Banks*: Land Mortgage Banks on a co-operative basis were started in the Madras State in 1925. The Government, after examining Mr. Hemmingway's proposal of 1919, which was based on the Central Provinces system, decided that there should be separate mortgage banks to raise long-term funds and lend money for long periods to the agriculturists for the repayment of prior debt and for the improvement of land, and ordered the Registrar of Co-operative Societies to formulate proposals on that behalf. The Registrar's proposals followed the lines of the Jhang Co-operative Mortgage Bank of the Punjab. In 1925 the Government accepted the proposals and permitted the formation of the banks.

According to the proposals accepted by the Government, the banks were to be based on limited liability with restricted area of operation (a compact group of villages). Funds were to be raised through the issue of debentures for 20 years, at a rate not exceeding 7% against the lands mortgaged to the banks. The borrowing power of each bank was to be limited to 8 to 10 times the paid-up share capital, and the borrowing power of a member to 50% of the value of land mortgaged, subject to a maximum of Rs. 1,000. The period of a loan given to a member was not to exceed 17 years and the rate of interest, 9%. The Registrar of Co-operative Societies was to be appointed Trustee for the banks for the due discharge of their obligations to debenture holders. To give a fillip to the movement and to encourage the purchase of the debentures by the investing public, the Government agreed to purchase an amount equal to that issued to the public subject to an overall maximum of Rs. 2½ lakhs and a maximum of Rs. 50,000 per bank.

Progress in the beginning was slow. In 1925 only two banks were formed, and by 1927, there were only ten banks. The investing public remained unattracted by these debentures, and only three of the banks could sell their debentures. So the position was reviewed by the Townsend Committee on Co-operation in 1927, and they recommended the formation of a Central land Mortgage Bank to issue debentures and finance the primary banks.

Accepting this recommendation the Government formed the

Madras Co-operative Central Land Mortgage Bank in 1929. Membership was thrown open to both individuals and primary land mortgage banks. The capital of the bank was fixed at Rs. 20 lakhs, divided into shares of Rs. 100 each. The management of the bank was vested in a Board of Management, consisting of 18 members, of which 9 were to be representatives of primary banks, 6 reprepresentatives of individual members, 2 to be nominated by the Registrar and the Registrar himself as ex-officio member. The Registrar was also to be Trustee of the Bank on behalf of the debenture holders. The actual day to day working of the bank was entrusted to an Executive Committee consisting of the Registrar, the President, the Vice-President, the Treasurer and two others representing primary banks. When one of the Registrar's nominees was not among the six, the Registrar had the power to nominate one of them to the Executive Committee and increase the number to 7.

The Central Mortgage Bank centralizes the issue of debentures on the basis of mortgages and other assets transferred to it by primary banks. Under the provisions of the Madras Co-operative Land Mortgage Banks Act (X of 1934) which governs the operations of the mortgage banks, the Central Mortgage Bank is authorized to issue debentures upto 25 times its paid-up share capital and reserve fund. The total amount due on the debentures may not exceed the total amount due on the mortgages, the amounts paid thereunder and remaining in the hands of the Board or the Trustee. Debenture holders have a floating charge on all mortgages assigned in favour of the Central Mortgage Bank. The Registrar, as Trustee, has to see to the discharge of the bank's liabilities in respect of the debentures. All the mortgages and other assets transferred to the Central Bank by primaries vest in the Trustees.

The Central Bank now floats debentures for 20 years at 3 per cent, interest being payable half-yearly. In 1946-47 two series were issued at 2¾%, but owing to an alteration in circumstances, a reversion had to be made to 3% in subsequent series. The debentures upto and inclusive of XXIII series are redeemable upto the annual collections under principal from the primary banks, but subsequent series have been made irredeemable for the first ten years from the date of issue. This was done in order to make the series attractive to the investing public. Government have fully and unconditionally guaranteed the principal of and the interest on the debentures to a maximum of Rs. 550 lakhs, exclusive of the value of those debentures redeemed by the Bank. The debentures have also been declared trustee securities under the Indian Trust Act. Local bodies and municipalities have been permitted to invest their

provident fund deposits and railway cess funds in these debentures, and a similar permission has been accorded to the Provincial and District Co-operative Central Banks to invest their general funds and reserve funds in these debentures and reckon such investments as fluid resources. Under section 2 of the Reserve Bank of India Act, the Central Land Mortgage Bank has been declared a Provincial Bank.

Debentures are issued once or twice a year when money market conditions are favourable. During the period intervening between two such issues the Government have agreed to give temporary accommodation to enable the bank to carry on its transactions. Redemption of these debentures is effected through a Debenture Redemption Fund fed annually out of the banks realizations. A special reserve to meet unforseen losses too has been created.

40% of the net profits of the Central Mortgage Bank, as declared by the Registrar, has to be carried to the Reserve Fund, and the balance is distributed as dividend on shares, subject to a maximum dividend of 1% above the rate payable on debentures.

The area of operation of the primary banks now extends to a revenue taluk, and persons owning agricultural land within that area are admitted to membership. The primary banks are affiliated to the Central Bank and borrow money from it upto 20 times their paid-up share capital and reserve fund. The primary banks lend money to individual members upto Rs. 5,000, for redemption of mortgages, redemption of prior debt and improvement of land or methods of cultivation. In deltaic areas the limit has been raised to Rs. 15,000. In special cases loans may be given for purchase of land too. The lending rate is usually 1¼% more than the borrowing rate, and loans are repayable in 20 years. The present borrowing rate is 4¼% and so the lending rate is 5½%. They are secured by the first mortgage of lands and cannot exceed 50 per cent of the market value of such lands on the pre-war basis. Lands mortgaged are revalued biennially. Each primary bank is managed by a board consisting of 9 members who serve in an honorary capacity.

When an application for a loan is received from a member, a thorough scrutiny is conducted as to the purpose of the loan, the applicant's title to land offered as security, the value of the property, the repaying capacity of the applicant, etc., and if satisfied on these counts, the application is forwarded to the Central Bank by the primary bank. After a further scrutiny by the Central Bank, the loan is sanctioned. Thereafter the borrower has to mortgage the land to the primary bank, which in its turn assigns it to the Central Bank. On completion of these requirements, the loan is disbursed.

There are at present 119 primary banks, distributed over 24 districts, covering about 18,375 of the 35,932 villages of the State. The total membership, as on 30th June 1949, was 112,998. There are banks in every district, but there are still large areas within some districts which are not covered by banks. In the dry areas of the Ceded Districts, banks are few, as also in the zamindari tracts. The Department of Co-operation has been hesitant regarding the starting of banks in dry areas, as financial success is not assured, and the unsurveyed and unsettled condition of the zamindari tracts has been the factor standing in the way of the formation of banks there. The Madras Committee on Co-operation, 1940, after a thorough examination of the difficulties existing in these two areas, recommended the adoption of the Torrens system for the zamindari tracts and Government financial aid and the diversion of funds from the Famine Relief Fund to the mortgage banks in dry areas peculiarly susceptible to frequent crop failures. In view of the wide prevalence of rural indebtedness, the liquidation of which even in manageable cases is dependent on the aid given by Mortgage Banks, and the great necessity that exists for the improvement of land, it is urgent that banks should be formed in every taluk and consistent with the financial solvency of the banks, loans for long periods should be given to the needy agriculturists. The special risks attending the grant of such loans in dry areas should be covered by the special measures proposed. The difficulties in the zamindari tracts will be removed with the abolition of the zamindaris and the settlement of those areas on a ryotwari basis. But it cannot be said now how long the process will take. In all probability it will take a decade or more, and it is unjust to deny banks to those areas till then. Under the Torrens system proposed by the Committee, when any land is proposed to be mortgaged to a bank by an applicant for a loan, the bank will notify the fact, in order to bring to light any hidden claims, and if within a stipulated period no claim is made, the title of the applicant is assumed to be clear. The introduction of such a system will meet the special case of those tracts.

Out of the 18,375 villages covered, loans have been given only in 6,471 villages, roughly a third. The total of loans granted since their inception upto the end of 1948-49 was Rs. 645·34 lakhs, out of which Rs. 396·42 lakhs were repaid, leaving a balance of Rs. 248·92 lakhs outstanding on 30th June 1949. This sum, viewed against the total rural debt of the State of Rs. 175 crores, is an insignificant percentage. Loans given to individuals during the years and outstanding against them at the end of the year for the years, 1938-39 to 1948-49, are stated in table XLI.

TABLE XLI

| | | Loans given during the year | Loans outstanding at end of year |
|---|---|---|---|
| 1938-39 | .. | 5852865 | 18917981 |
| 1939-40 | .. | 4281940 | 21880950 |
| 1940-41 | .. | 4077760 | 24148955 |
| 1941-42 | .. | 4040299 | 26378891 |
| 1942-43 | .. | 2481849 | 28059949 |
| 1943-44 | .. | 1831000 | — |
| 1944-45 | .. | 2482000 | 22891000 |
| 1945-46 | .. | 4118000 | 24524000 |
| 1946-47 | .. | 4696000 | 26891000 |
| 1947-48 | .. | 6232507 | 30071272 |
| 1948-49 | .. | 7587014 | 24892851 |

From the figures it is seen that from 1942 onwards, owing to the conditions created by the war, there was a decline in the loans given to individuals. This decline was accompanied by a large inflow of advance collections. But from 1944-45 onwards an appreciable increase in loans has taken place along with a fall in advance repayments.

A great number of these loans are taken for the repayment of prior debt, and only an insignificant amount for the improvement of land. This is partly due to the lack of a demand for loans for the latter purpose and more pressing demand for loans for the former purpose, and partly also to the absence of a suitable agency to advise the banks on the profitability of such loans. As the Royal Commission on Agriculture has stated and as the experience with taccavi loans under the Land Improvement Loans Act has shown, there is hardly a demand coming from small holders for finance to effect any improvement on land, such as digging a well or consolidating a holding. Further, it is very diffcult for the banks, as constituted at present, to decide whether a particular improvement contemplated will turn out to be a business success or not. Still, if the usefulness of these banks is to be enlarged and they are to play their legitimate part in the development of agriculture, they should, as the Madras Committee on Co-operation, 1940, have recommended, in larger measure turn to the grant of such loans and modify their machinery and business methods accordingly.

This would necessitate the grant of loans for periods shorter than 20 years. At present all the loans are for 20 year periods because almost all of them are for the redemption of prior debt. While some types of land improvement also will require such loans,

a great many other types can be financed with shorter loans. The agricultural credit societies will be granting loans upto 7 years if the Madras Committee's (on co-operation) recommendation is adopted. But there is no agency at present to bridge the gap between 7 years and 20 years. The only agency which can be thought of in this connection is the Mortgage bank, and if loans for land improvement become a regular feature, loans for shorter periods also must be freely granted. To finance such loans, as the Madras Committee have recommended, debentures for 10, 15 or 20 years may be floated.

Reduction of period should be accompanied by a reduction in the size of the loan too. At present the banks appear to be reluctant to issue small loans to ryots. Amounts below Rs. 1,000 contribute only 11% of total amount lent out and 36% of the total of loans. The bulk of the loans are for amounts between Rs. 1,000 and Rs. 5,000. The number of loans issued in excess of Rs. 5,000 in 1948-49 was 239 in number and amounted to Rs. 15·41 lakhs. The prediliction for larger loans is perhaps due to the low cost of investigation, etc., and the lower risk attaching to them. But to deny the privilege of borrowing to small holders on the ground of expense to the bank, does not appear to be legitimate. In proper discharge of the bank's function, loans below Rs. 500 too should be freely given, especially in view of the fact that under the Agricultural Loans Act, loans between Rs. 500 and Rs. 100 for the repayment of scaled down debt are given.

The usual rate of interest charged on loans at present is 5½%. This leaves a margin of 2¼% on the debenture rate, which is lower than the 2½% recommended by the Reserve Bank. Till 1945-46, the lending rate was 6%, with a margin of 3% on the borrowing rate of the Central Bank. But with a view to cheapening loans to the ultimate borrower, the rate has been lowered since. For land improvement as well as for the redemption of prior debt, the lower the debt charges, the greater the ability of the borrowers to repay quickly. At present the rate charged compares favourably with the rates charged in other States. In no other State, except Bombay, is the rate as low as 5½%.

To more efficaciously help in the redemption of prior debt and to prevent the inheritance of debt by the younger generation, the Madras Committee on Co-operation, 1940, have recommended the linking up of mortgage credit with schemes of insurance and debt conciliation. Insurance schemes are expected to provide for the repayment of debt in the event of the premature death of the borrower, and the link up with debt conciliation will enable a

ready repayment of a conciliated debt, through the agency of a fresh loan from a mortgage bank. One factor which at present stands in the way of reduction of debt through conciliation is the lack of an agency for immediate debt clearance. If through a closer alliance between a conciliation board and a mortgage bank, the bank will take over the conciliated debt, the prospects of successful conciliation will become brighter. Such closer alliance may be effected, as recommended by the Committee, through giving representation to the mortgage bank concerned on the debt conciliation board, through the board notifying the bank of all proceedings, and through empowering the bank to initiate conciliation proceedings in cases where applications for loans have been made to it.

Yet another way in which the usefulness of these loans can be enhanced is by minimizing the delays in the sanctioning of loans. Much of the delays associated with the grant of loans at present are unavoidable and caused more by the lethargy of the applicants rather than by the dilatory system of the banks. Still it should be possible, by slight changes in the system, to reduce delays. Some of the suggestions made on this behalf by the Madras Committee are (1) the devolution of power to recommend loans not exceeding Rs. 5,000 to co-operative sub-registrars, (2) devolution of power to sanction loans upto Rs. 2,000 to President of the Central Land Mortgage Bank, (3) legislative provision for dispensing with the assignment of mortgage bonds by primary banks to the Central Bank, (4) obligatory production of documents by creditors and others, and (5) statutory obligation for the furnishing of information by landholders in zamindari areas.

If these measures are implemented, it will be possible for the applicants to receive loans in time to meet their requirements. Timeliness in the sanctioning of loans, though not so important in the case of redemption of prior debt, is very important in the case of loans required for land improvement, and if these banks are to embark on a forward policy in that respect, expeditious disposal should be the essence of their policy.

Debentures held by the public against the Mortgage Banks were at the end of 1948-49 Rs. 421·31 lakhs. Since the whole of this amount is fully and unconditionally guaranteed as regards repayment of principal and payment of interest by the Government, there has not been much difficulty in finding sales for them. But the funds raised thus have been only a moiety of the amount required, even to help the solvent among the agricultural classes.

Much larger sums are needed to liquidate rural indebtedness and finance land improvement, and for the raising of it, it would not be proper to expect the Government to extend their guarantee. The mortgage banks therefore have to take measures to dispense with the Government guarantee and rely on their own financial prestige to raise all the required funds. In this behalf they should build up a large share capital and reserve fund, make provision for bad and doubtful debts, create a large sinking fund and make their debenture issues as attractive as possible. The Reserve Bank can help by taking up a part of the debentures, without sacrificing the liquidity of their investments, as these debentures find a ready sale now in the stock market and have been declared trustee securities. But whatever help the Government or the Reserve Bank may render, the ultimate value of these debentures will depend on the financial standing of the banks and the prestige they have for sound business. These will be gained by scrupulous management rather than by outside help.

Paid-up share capital and reserve fund of the Central Land Mortgage Bank are at present Rs. 12·38 lakhs and Rs. 18·41 lakhs respectively. For 120 banks, one of which is a provincial bank, this share capital is definitely small and should be enlarged as opportunity arises. Together they form only about 3% of the total working capital available with them of Rs. 845 lakhs. Most of the banks have been working at a profit, but some have incurred losses. In 1948-49 the profits made by the Central Bank amounted to Rs. 2·7 lakhs and by the primary banks to Rs. 1·14 lakhs. Losses sustained amounted to Rs. 27,254.

Reviewing the work of these banks during the 25 years of their existence, it is gratifying to note that the progress made so far has been satisfactory. But as yet their transactions touch only the fringe of the problem of rural indebtedness and, as has been stated above, hardly anything has been done by way of land improvement. While it is true that clearance of debt is a prerequisite for a forward policy in agricultural development, that clearance itself is conditioned by an enhancement of the income of the agriculturists, and for that, there should be a concurrent investment on land improvement. Mortgage banks should therefore serve both objectives simultaneously and try to reach through increase in their number and multiplication of transactions every solvent agriculturist, big or small.

## Chapter XV

# AGRICULTURAL CO-OPERATION (Contd.)

### *Co-operative Marketing Societies*

A type of agricultural co-operative society of great potency in agricultural development and at present playing some part in the agricultural improvement of the State is the marketing society. Such societies have been in existence in the State for the last twenty years, and at present number nearly 193. At first they were started as sale societies or as loan and sale societies, many of which exist even today as such. The later societies were started as full-fledged marketing societies, and since 1936, with the formation of the Provincial Marketing Society, have been knit together into a federal organization.

The earliest society for the joint sale of produce was started in 1918 in South Kanara, the South Kanara Planters' Co-operative Sale Society, for the sale of arecanut. A few more societies followed quickly, but none of these early attempts proved successful. A new impetus for the formation of such societies came with the reorganization of the Co-operative Department in 1925 and the placing of the responsibility for non-credit work on Deputy Registrars. By 1939, there were 134 sale societies, and by the end of 1947, 193 societies.

The more important of these societies are Tiruppur Trading Society for the distribution of cotton seed and the sale of cotton, the Rasipuram Trading Society for the sale of cotton and groundnut, the Anakapalle Loan and Sale Society for marketing jaggery, the Nilgiris Potato Growers' Society, the Cardamom Sale Society in the Madura District, the Tanjore Marketing Federation for paddy and rice, the Coimbatore Marketing Society for jaggery, the Malabar District Marketing Society for pepper and the Kodur Society for fruits. During the war period a number of growers' societies were formed, such as the Sugarcane Growers', Fruit Growers', Cotton Growers', Plantain Growers', Betel Leaf Growers', Casurina Growers', etc.

The object of these societies, as stated in their by-laws and by the Madras Committee on Co-operation, 1940, are—

(1) to advance loans to members on the security of their produce;

(2) to arrange for the sale of produce of their members;

(3) to rent or own godowns to facilitate the grant of loans to members and sale of their produce;

(4) to act as agent of those members which are affiliated societies, in the matter of disbursing and receiving loans sanctioned to individual members of such societies; and

(5) to act as agent of those members which are affiliated societies, in the matter of receiving for safe custody in their godowns or elsewhere the produce pledged to such societies by their individual members.

From these objects it will be seen that their functions are at present limited to granting loans to members to hold back produce from the market, to storing such produce in godowns and warehouses and to acting as agents for their sale. The development which has taken place in such societies elsewhere, especially in the U. S. A., of outright purchase of members' produce for sale on own account has not yet become a feature of their working in the State. The only kind of help they are in a position to render to members at present is to give loans to enable them to hold back produce for the seasonal rise. They have not been able materially to influence the price received by the sellers. From the small volume of the transactions effected through them, it is clear that nothing much by way of the other economies in marketing, associated with such societies elsewhere, has accrued to members. Table XLII gives a succinct idea of their working during the years 1938-49.

The number of societies and their membership have been steadily increasing, as also their transactions. Value of stock sold through the societies more than doubled between the years 1938-39 and 1944-45 and trebled by 1946-47 and was sixfold in 1948-49, and the percentage it bore to the total stock received also increased. Still, when compared with the total value of farm produce in the State, these values form an infinitisimal part and readily indicate the insignificance of the part played by these societies in the marketing process. Since 1942-43, loan business has been declining as quicker sales have been taking place. The paid-up share capital appears to be too small for effective working and the total number of societies, inadequate to cover all the 223 taluks of the State. The average membership now is only 667, which is all too small for a large agricultural State like Madras. Increase in membership will not only yield the advantages of Co-operative Marketing to more, but will also increase the economies accruing to all through

TABLE XLII

Working of sale societies and marketing federations

| | 1938-39 | 1939-40 | 1940-41 | 1941-42 | 1942-43 | 1943-44 | 1944-45 | 1945-46 | 1946-47 | 1947-48 | 1948-49 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Number of societies .. | 134 | — | — | — | 172 | 181 | 181 | 189 | 193 | 192 | 238 |
| Number of members .. | 27548 | 36787 | 45637 | — | 46118 | 76641 | 90880 | 96191 | 107543 | 115483 | 158772 |
| | | | | (In Lakhs of Rs.) | | | | | | | |
| Paid-up share capital .. | — | — | — | — | 6·58 | 8·71 | 10·41 | 12·67 | 16·14 | 18·17 | 50·39 |
| Loans issued during the year .. | 95·96 | 107·30 | 142·56 | 147·07 | 196·76 | 139·18 | 121·32 | 118·64 | 131·79 | 188·20 | 144·11 |
| Value of stock in the beginning of the year and that received during the year .. | 179·05 | 230·52 | 303·21 | 373·37 | 477·16 | 412·91 | 359·66 | 362·15 | 286·14 | 233·44 | 317·57 |
| Value of stock released without sale .. | 52·13 | 109·34 | 124·04 | 174·45 | 186·58 | 191·32 | 178·19 | 157·34 | 94·64 | — | — |
| Value of stock sold .. | 45·87 | 44·75 | 46·57 | 75·33 | 211·15 | 91·35 | 100·62 | 124·60 | 143·23 | 226·77 | 273·52 |
| Net profit .. | 0·43 | 0·67 | 0·67 | — | — | — | — | — | — | — | — |
| Net loss .. | 0·11 | 0·20 | 0·20 | — | — | — | — | — | — | — | — |

an increase of turnover. As the Madras Committee on Co-operation recommended, there should be a marketing society for each taluk at headquarters, which should comprehend as many of the ryots who have surpluses for sale as possible. An intensive development of each society alongside an extensive development is what is needed, to enable ryots to take full advantage of Co-operative Marketing. During the war peroid these socities did commendable work in the distribution of manure, composts, seeds, implements, tyres, soles, etc. and undertook some processing of produce too.

The Provincial Marketing Society was formed in 1936, with headquarters at Madras, to help sales societies to market their goods and co-ordinate their activities. 303 societies and 60 individuals are its members, and it has a paid-up share capital of Rs. 47,000. It undertakes commission sales of such goods as rice, butter, ghee, fruits, potatoes, etc. Most of its sales are at present retail in the Madras market, through its godowns, though its objective is to create an assured market for its members' produce for bulk sales. The Government sanctioned a special staff of one Co-operative Sub-Registrar to act as its Secretary, one Senior Inspector as out-door assistant, one typist and two peons. A subsidy is also given to meet expenditure in respect of rent, pay of establishment, etc.

From 1938-39 onwards, it has been transacting increased business and contacting other co-operative institutions and college hostels and clubs. It also publishes a bulletin each week, containing prices of articles available with it and other societies and also quotations of Madras wholesale market rates for important commodities. Its sales transactions for the years 1938-39 to 1948-49 were the following :—

TABLE XLIII

| | Lakhs Rs. |
|---|---|
| 1938-39 .. | 1·7 |
| 1939-40 .. | 2·0 |
| 1940-41 .. | 2·4 |
| 1941-42 .. | 4·9 |
| 1942-43 .. | 11·7 |
| 1943-44 .. | 18·7 |
| 1944-45 .. | 25·8 |
| 1945-46 .. | 7·58 |
| 1946-47 .. | 3·66 |
| 1947-48 .. | 6·14 |
| 1948-49 .. | 5·83 |

During the war years, especially after 1941-42, its sale transactions increased considerably as a result of its being recognized as a wholesaler for the distribution of controlled goods, such as, pulses, grains, sugar, wheat, matches, etc. Its business in other goods, such as, oranges, potatoes, dry ginger, eggs, limes, carrots, coffee, malt extract, paper, etc., also increased, as more primary societies got affiliated to it. In 1943-44 it opened a vegetable depot and undertook the supply of ghee to the army to the tune of Rs. 22·25 lakhs. But some of these depots have had to be closed subsequently, for lack of business. The fall in business in 1945-46 is to be attributed to decontrol.

A remarkable development during the war period was the outright purchase of articles by the society. In 1944-45 out of the total sale transactions of Rs. 25·8 lakhs, Rs. 22·20 lakhs represented outright purchase. Of this, Rs. 7·7 lakhs worth were controlled commodities.

A war-time development in the organization of these sale or marketing societies was the formation of certain regional federations and growers' societies. Marketing federations for sale of paddy were formed in Tanjore, Nellore, Ellore and Guntur, as also the Tinnevelly Cotton Marketing Society and the Agriculturists Cooperative Wholesale Society in South Kanara. In 1942-43 the Tanjore Federation sold produce of the value of Rs. 18·6 lakhs and the Nellore Federation, of the value of Rs. 1·31 lakhs. Of these Federations, the South Kanara Wholesale Society has been the foremost. The Society had about 1,852 members, of whom 1,815 were individuals and the rest societies. It had 49 branches, at all of which advances were given to members on the security of produce. The chief product dealt in was arecanut. Its business was on a consignment basis, through its sale depots. It had 4 sales depots in the district, one of which was located in Mangalore where members' produce was pooled and auctioned. It had a sales branch in Bombay too. A grading section was attached to the depot at Mangalore. Total loans given out in 1946-47 amounted to Rs. 7·56 lakhs and the value of sales, to Rs. 31·35 lakhs. This Society continues to be the most remarkable example of a regional federation.

Most of the growers' societies were formed among sugarcane growers, though a few were formed among cotton, fruits, betel leaf, and casurina growers too. The fillip to the formation of these societies among sugarcane growers was given by the Sugar Excise Subsidy scheme which was put into operation in Vizagapatam, Kistna, East Godavari, Bellary and Coimbatore in 1939-40 and in Trichinopoly in 1940-41. Among the important societies

are the Vriyyur Sugarcane Growers' Union in Kistna, the Hospet Sugarcane Growers' Society in Bellary, the Kirlampudi Sugarcane Growers' Society in East Godavari, the Coimbatore Sugarcane Growers' Union, the Vizagapatam Sugars and Refineries Ltd., the Mangalore Sugarcane Growers' Society in South Kanara, the Etikopaka Co-operative Agricultural and Industrial Society and the Sri Rama Krishna Co-operative Agricultural and Industrial Society. In 1940-41 there was a total membership in these societies of 2,309 and loans distributed amounted to Rs. 79,536. By 1942-43, the number of sugarcane growers' societies increased to 14 and by 1944-45 to 17, 12 societies and 5 unions.

Among the other growers' societies, fruit growers' societies were more numerous and numbered 18 in 1943-44. They had a membership in that year of 1,410, a share capital of Rs. 26,734, an acreage of 29,177 acres and sale transactions of the value of Rs. 5,55,702. They undertook the supply of fruits to the military, which was discovered to be a most lucrative business. The most important of these societies were the Kodur Fruit Growers' Society in Cuddapah selling oranges through its sales depots at Anantapur, Hindupur and Hyderabad (Deccan) and through the Provincial Marketing Society, the Guntur District Fruit Growers' Society dealing in limes and oranges, the North Malabar Fruit Growers' Society selling pineapple, the South Kanara Fruit Growers' Society selling fruits and vegetable, the Kadayam Lime Marketing Society in Tinnevelly, the Chittoor Mango Growers' Society and the Palacole Fruit Growers' Society in East Godavari.

A noteworthy feature of the working of the sales and marketing societies in recent times has been the introduction of the system of controlled credit. A brief description of the system has already been given under Agricultural Credit Societies, and so need not be repeated here. An essential feature of that system is the affiliation of the credit society to the marketing society and the sale of the borrowers' produce through the marketing society. Loans are thus fully safeguarded, and the business of the marketing society too is increased. From the point of view of the borrowers, punctual repayment of the loan and a good price for produce are both assured. The system was in 1948-49 working in 14 districts of the State and comprehended 47 sales societies and 552 village credit societies. Loans given under it amounted to Rs. 10·01 lakhs, and the value of produce sold was Rs. 12·85 lakhs. In the Ceded Districts a special scheme of controlled credit was working through 8 sale societies and 146 credit societies. To intensify this system, Market Panchayatdars were appointed in credit societies

in 1945-46. They are expected to stimulate the flow of produce from the village to the sale society.

During the war period another development has been the closer integration of marketing societies with consumers' stores. The phenomenal increase in the number of stores and the recognition of marketing societies as licensed leaders in controlled goods contributed to this result. Co-operative intertrading though difficult of achievement in every country, has always been considered to be a most desirable *laison* between the producer and the consumer branches of co-operation, and if the war-time connections are extended into the post-war period, one of the most essential, all the same, difficult steps in the expansion of co-operation would be built. During the war only a beginning was made in the direction, purchases covering only Rs. 18·50 lakhs during the last year of the war, still if the new spirit of amity should animate their dealings in the future too, a bright prospect will open out for the consumers' as well as the sales societies.

From the foregoing account of Co-operative Marketing it will be clear that some progress has been made, but that it is insufficient to meet the needs of the agricultural community. Many of the societies exist as loan and sale societies, with much business on the loan side and little on the sales side. As recommended by the Madras Committee on Co-operation, 1940, they should be converted into full-fledged marketing societies which will concentrate their attention on the sale of produce and grant loans only for marketing purposes. Such a society for every taluk, undertaking grading, storage and sale will put the marketing of farm produce on a sounder basis. At present these societies lack also storage facilities, which prevent the proper development of marketing finance. Lack of funds and lack of facility for acquiring sites are the handicaps in the way. The Government of Madras have been utilizing the Government of India subvention for rural uplift partly for the construction of godowns, and under the scheme in operation, a 25% grant on the estimated cost of construction and the balance as a loan at 3½% interest, repayable in thirty years, were given to marketing societies, but by the end of 1938 only 12 had built godowns and 33 more had proposals on hand. By 1940-41 23 sale societies and 21 credit societies had availed themselves of the benefit. In 1943-44, the Registrar of Co-operative Societies was empowered to make grants and sanction loans. Even so, only a few more were attracted by the scheme. At the end of 1946-47 only 24 sale societies had availed themselves of the facility. The grant was raised from 25% to 50% in 1948-49.

It is imperative therefore that a forward movement in the building of godowns and warehouses should be inaugurated and that the Government directly or through Central Banks should provide larger funds for the purpose. Centrally located godowns will facilitate the issue of warehouse receipts, which when made negotiable with or without a Government guarantee, will revolutionize agricultural finance.

In addition to the Marketing Society to be located at the headquarters of each taluk, the Madras Committee have recommended the institution of special crop marketing societies in centres of production for such crops as tobacco, groundnut, cotton, potatoes, fruits, etc. sold in distant markets. These societies should be organized on a larger scale and should undertake all the different marketing processes and procure good prices and all the other economies of bulk transactions for the growers. As has been noticed above, a few such societies exist, but they are all too few for the large volume of production in existence.

*Rural Consumers' Stores*: A war-time development of Agricultural Co-operation is the rise in large numbers of consumers' stores in the countryside of the State. Before the war there were only a few inconspicuous examples of rural stores, not more than 21, but by the end of the war their numbers had increased to over 700. On 30th June 1944 there were 713 such stores with a membership of 1,10,164. By the end of 1947 the number had increased to 1,132 and the membership to 2·49 lakhs.[1] Corresponding to this increase, the share capital, annual borrowings and value of sales also increased. The share capital increased by 313 times, borrowings by 490 times and sales by 137 times. As against a total working capital of Rs. 56,000 in 1939, they had a working capital of Rs. 99·10 lakhs in June 1947, and the value of annual sales increased from Rs. 3·51 lakhs in 1939 to Rs. 480·57 lakhs in 1947.

Comparative figures for the three years 1939, 1946 and 1947 are given in table XLIV.

Many factors, most of them arising out of the war and the post-war situation, have been responsible for this growth. Scarcity of foodgrains and other essential commodities such as, kerosene, sugar, cloth, paper, drugs, etc., the growth of a salaried middle class of Government servants in villages, controlled prices, the practice of sale to non-members, the greater cash holdings with villagers, state control of trade, special aid and help given for

1. Separate figures for rural stores are not available after 1946-47.

TABLE XLIV

| | As on 30-6-39 | As on 30-6-46 | As on 30-6-47 |
|---|---|---|---|
| Number of stores (Rural) .. | 21 | 822 | 1132 |
| Number of members .. | 2888 | 1·62 lakhs | 2·49 lakhs |
| | Rs. (in thousands) | Rs. (in lakhs) | Rs. (in lakhs) |
| Share capital paid-up .. | 17 | 27·87 | 53·29 |
| Borrowings during the year .. | 41 | 4·97 | 6·51 |
| Borrowings outstanding at the end of the year .. | 7 | 24·59 | 34·30 |
| Total working capital .. | 56 | 57·43 | 99·10 |
| | (in lakhs) | | |
| Value of annual purchases .. | 3·28 | 368·80 | 466·25 |
| Value of annual sales .. | 3·51 | 390·15 | 480·57 |
| Amount of net profit .. | Rs. 9,849 | 0·51 | 10·65 |

their working by the Government, the introduction of the federal principle in their organization and the more liberal financial policy followed by the Central Banks have all facilitated their formation and successful working. These new conditions removed the handicaps under which earlier attempts at retail trading on co-operative lines had laboured and made the management of these stores more or less riskless. The demand for the scarce commodities at controlled prices was so great and the sources of supply so few, that every village asked for the opening of a co-operative, and where one was opened both members and non-members eagerly became its clientele. Retail trading, always inefficiently organized in the countryside, almost broke down through scarcity of commodities, and in many villages the co-operative society remained the sole source of supply. This accounts for the disproportionate development of these stores in rural areas and their numerical predominance in the total number of stores. Out of the 1,688 stores in the State in 1946-47, rural stores were 1,132 in number, forming about 66% of the total number. In their sales also they occupied an important place, with 35% of the total annual sales turnover of all primaries to their credit. Part of these transactions they could finance with funds raised locally through deposits, which formed nearly 1/3 of their total borrowings.

The distribution of these rural stores is uneven over the State. Large numbers of them exist in the districts of West Godavari, Guntur, South Kanara, East Godavari, Madura, Ramnad, Tinnevelly, Malabar, Kistna, Tanjore, Vizagapatam and Chingleput. West Godavari which has the largest number, had 52 stores in 1943-44 and Chingleput which among these districts has the smallest number, had 34 stores. But the average membership in the Godavaris was small, 68 in West Godavari and 57 in East Godavari against a State average of 155. The other districts where too average membership was small were Cuddapah with 73 and Nellore with 67. The districts of the Nilgiris (49), Coimbatore (435), Tinnevelly (290), Malabar (276), Salem (232) and Ramnad (229) have large average membership. Figures for the later years are not available. But since many new stores have been formed in 1945-46 and 1946-47, the district-war distribution of these stores would at present be different.

The average share capital of these stores was about Rs. 2,370 in 1943-44, but about 46 of them had above Rs. 5,000 and 9 of them over Rs. 10,000. Quite a large number of them, located in the districts of West Godavari, Cuddapah and Nellore had less than Rs. 1,000 as share capital. This sum may be considered to be too low for efficient working, and is a direct indication of small membership. During the war period and in the post-war years that are just past, trading with non-members has helped to keep the sales turnover large enough for economical management, but the discontinuance of sales to non-members, bound to take place in the near future, will leave them with too little business. A share capital of Rs. 2,500 is considered to be the optimum for a medium sized store, and on that basis more than half the number of stores will be below the optimum line.

As has already been mentioned, some part of the working capital was raised locally by way of deposits, but for 2/3 of their funds they had to depend upon borrowings from Central Banks. Large deposits were attracted in the districts of Madura, Tinnevelly, Coimbatore and Ramnad, and in 1943-44 these districts contributed over Rs. 10 lakhs of the Rs. 17·62 lakhs of total deposits in these stores. That the stores have even in their early years been able to attract deposits speaks well of the confidence reposed in them by members, but the aim nevertheless should be to become as self-supporting as possible and reduce to the minimum their dependence on Central Banks.

In their business turnover too much inequality has prevailed among them. The average annual sales for the State as a whole

was Rs. 27,000 in 1943-44, but the district average in 13 districts was below this figure. They have been ridiculously low in East Godavari, West Godavari, Tanjore and Cuddapah, not exceeding Rs. 10,000 in any of them. High turnovers were recorded in the Nilgiris, Coimbatore, Malabar and Tinnevelly. As a rule, low sales have characterized the surplus districts in grain production and high sales, the deficit districts, an obvious indication of the fact that the sale of grain in deficit districts has contributed to the bulk of the sales of these stores.

Loss societies too have been more numerous in the surplus districts with low sales. Roughly a third of the stores have not yet established themselves as sound concerns, and in the districts of East Godavari, West Godavari, Kistna, Guntur and North Arcot their numbers are alarmingly high. The advantage that the stores in deficit districts have had is that they have been given supplies of grain through import quotas, while the stores of surplus districts have had to rely on local procurement. Furthermore, while the demand for grain from these stores has been high in the deficit districts, there has been little of such demand in the surplus districts, the producers there being in a position to provide for their own consumption. And since foodgrains contribute two-thirds of the value of an average family's purchases, the business of the stores of surplus districts has merely consisted of sales of such controlled articles as sugar, kerosene, paper, etc., for which the demand from any family cannot be high. These circumstances have accounted for the low sales and low trading profits of the surplus districts.

The prospect for these stores under decontrol of foodgrains is not therefore very bright, either in surplus or in deficit districts. If once more the regular traders step into the trade in foodgrains, the demand for foodgrains from these stores even in deficit districts will fall away, and when that happens it is very doubtful if the remaining business will make it worthwhile for the stores to be continued. It is essential therefore that steps should be taken even now to establish their position as trading bodies, by building up a business in non-food lines. That appears to be the only way in which the new movement can be perpetuated and made an integral part of the rural life of the State.

The rural stores, along with the urban and semi-urban stores, are all affiliated to the District Wholesale Stores formed in each district. The first wholesale store of the kind was formed in December 1939 for the Madura-Ramnad Districts and the second one was started in Tinnevelly in June 1940. By 1943 all districts

except Madras had a wholesale store to serve them. There are now 23 such stores for the 24 districts of the State. The wholesale stores in Coimbatore, Madura and East Godavari serve not only the districts in which they are located, but also the adjacent districts of the Nilgiris, Ramnad and West Godavari.

The main purpose for which these wholesale societies was formed was the procurement of adequate quantities of commodities at economic rates for the benefit of the retail stores. During the war period much difficulty was experienced by retail stores in procuring supplies, as they had to depend entirely on private wholesalers, who with their profiteering instincts greatly sharpened by war conditions, were only too eager to make the stores also their unfortunate victims. It was realized that unless a larger trading body, with greater financial resources, was created to undertake the work of wholesale purchase and distribution, the purchase part of the work of retail stores would remain inefficient. The great examples of the English Wholesale Society and the Scottish Wholesale Society served as the inspiration for the new organization, and wholesale stores were formed more or less on the approved federal basis of English experience. But unlike that organization where membership is confined to primary societies, in the wholesale stores of Madras, which are not strictly federal, individuals and non-co-operative institutions too were admitted as members. On 30th June 1947 there were 6,460 individuals and 301 non-co-operative institutions and public bodies as members, while co-operative members consisted of 1,589 retail stores and 1,938 other types of co-operative societies. Total membership in 1948-49 was 12,442. Consistent with the tradition of higher co-operative institutions in the country, individuals were admitted as members to strengthen the management personnel and fully exploit for the benefit of these wholesales, the experience and enthusiasm of tried co-operative leaders. Collectively they had a paid-up share capital at the end of 1948-49 of Rs. 36·70 lakhs, a reserve fund of Rs. 30·56 lakhs and a working capital of Rs. 411·84 lakhs.

Since their formation they have been working as successful business concerns, and in addition to discharging the function for which they were originally designed, have also acted as important agencies in the Government scheme of food procurement and distribution and in the stocking and distribution of other controlled commodities. The finances at their disposal have been adequate, and all of them, except one, viz., the wholesale stores at Vizianagaram, have worked at a profit. In addition to supplying food-

grains and other commodities to the retail stores, they have also made bulk supplies to devasthanams, mutts, hostels, educational institutions, jails, sub-jails, certified schools, hospitals, railways, etc.

The commodities traded in, apart from foodgrains, are dhall, wheat products, sugar, kerosene, paper, cloth, fuel, stationery, toilet articles, oils, oil cakes, cotton seeds, honey, biscuits, ink, soaps, potatoes, onions, cocoanuts, etc. The value of purchases of controlled articles in 1946-47 amounted to Rs. 1,661 lakhs and of uncontrolled articles, Rs. 158 lakhs. They tapped various sources of supply, such as, centres of production within and outside the district, local private wholesalers and commission agents and civil supplies agencies. Among sources of supply, producers societies appear to be negligible, though some trading was effected with the Marketing Federations for paddy in the surplus grain districts. Some of the wholesales have undertaken processing and manufacturing activities too, such as, conversion of paddy into rice, gram into dhall, production of gingelly oil and the manufacture of hats. They have dealt in consignment goods also on a commission basis in a large variety of goods, such as, malt extract, oils, oil cakes, cotton seeds, honey, biscuits, inks, soaps, potatoes, onions, cocoanuts, etc. Their functions as Government agencies in the distribution of controlled articles obliged them to sell controlled articles to private retailers and directly to consumers through retail distribution depots. In 1943-44, for which year figures are available, trade with the primaries formed more than 60% of trade only in six districts, viz., Coimbatore, Anantapur, North Arcot, South Kanara, Kurnool and Trichinopoly. In some other districts, such as, Chingleput, Guntur, Vizagapatam, Nellore and Malabar such trade formed only 25% of their total trade. For the later years detailed figures are not available.

That the relationship between the primary stores and the wholesales has not been cordial is only too evident from the business figures and the mutual recriminations which have been given expression to by them at Conferences. The Wholesales have accused the primaries of disloyalty, while the latter have charged the former with inability to supply the goods they need at competitive prices. It looks as though both organizations are to blame. The Wholesales have been preoccupied with their work as agents of the Government scheme of distribution and consequently have given little attention to developing their primary function of supplying controlled and non-controlled goods to the retail stores. On the other hand, the retail stores have not succeeded in building up a tradition of confining their wholesale purchases to the whole-

sales. However the business figures show that things have been gradually improving. While in 1942-43 purchases from the district wholesales by the primaries formed only 17% of their total purchases, in the first half of 1944-45, they formed 43% and in 1945-46, 34%. This tendency has to be kept up till at least 75 to 80% of the purchases are made from the wholesales. It has not been possible even in Britain for the retail stores to purchase everything they need through the Wholesale societies, and so a cent per cent trade with them may be a very difficult proposition in India. In 1941 the total co-operative wholesale trade in Britain represented only 70% of the total retail trade of the primaries.

So far, the district wholesales have been trading only in a narrow range of consumers' goods. Some of them have been dealing only in foodgrains and other controlled articles for which definite quotas are given to them. This partly accounts for the unsatisfactory nature of the relationship between them and the retail stores. If for many of the articles they need, the primaries have to go to private wholesalers, the habit will grow on them, and the loyalty which they should have towards the wholesale society will not be developed. From the point of view of the wholesales too, the sooner they start purchasing and stocking a variety of goods which the primaries habitually need, the sooner will their own business be established on a sound basis and its general profitability ensured. The Government scheme of distribution is a temporary phase in Governmental activity, and will sooner or later be given up. Its place must be taken up by the regular business of the wholesales, for developing which steps should be taken even now.

The complaint that wholesales are not in a position to supply goods at competitive prices arises from the inefficient manner in which their purchase departments are organized. They were set up in haste, to meet the exigencies of the moment and to carry out their Governmental functions. They are ill-fitted to serve as regular purchasing departments in peace time. Non-controlled articles are usually purchased piecemeal from private wholesalers, and with the addition of all the incidental charges are passed on to the retail stores. This arrangement makes prices charged higher than what private wholesalers directly charge the stores. The remedy for this is a reorganization of the purchase departments and the tapping of those sources of supply which are tapped by the private wholesaler. English example here clearly indicates that for co-operative wholesale trade to be successful, the ultimate sources of production should be tapped, and if possible the whole-

sales themselves should undertake production. As constituted at present, the latter may not be possible, but if the district wholesales are all federated into one provincial wholesale or a few regional wholesales as suggested in some quarters, the problem of production and wholesale purchase will more readily be solved. Some trading contacts have already been established with importers like H. J. Foster & Co., and producers like Parry & Co., Mysore Industrial Concerns and the Government Kerala Soap Institute.

As has been suggested by various conferences and conventions, inter-co-operative trade is another way in which this problem may be solved. At present in Madras the proper *laison* has not been established between the consumers' societies and the marketing societies. Except for some trade between the district wholesales of deficit districts and the Marketing Federations for paddy, very little by way of inter-co-operative trade has developed. Successive conferences of consumers' societies have urged the need for such a relationship, but war-time conditions and Government trading in many of the articles which may be dealt in by marketing societies have prevented the creation of favourable conditions for it. But in the post-transitional period co-operative ideals demand that such a development should take place, and in their own business interests too, both types of societies should welcome it.

The strengthening of the wholesale organization and the establishment of the proper relation between it and the retail stores is most essential for the perpetuation of the retail stores, especially in rural areas. In addition, other improvements in the organization and working of rural stores also will be needed. Increase of membership, promotion of loyalty among them, strengthening of share capital, development of local deposits, widening the range of business, employment of an efficient staff and the development of public spirit and co-operative feeling among the panchayatdars are some of the ways in which the existing defects may be removed and the store movement woven into the texture of agricultural co-operation. It would indeed be a great pity, if in the post-transitional period, through lack of enthusiasm and a felt need for consumers' stores, the large numbers of them which exist today, should go into liquidation.

*Producer cum Consumers' Co-operative Societies*: On the suggestion of some co-operators in Malabar, a new type of society, called the 'Producer cum Consumers' Society' was started in that district in 1945-46, consisting of both producers and consumers as members. Their functions were to be local procurement and importation of foodgrains, importation of other controlled articles

and their distribution to the public. The declared objective of these new societies was to ultimately displace the private dealers in retail trade. The scheme was started in Malabar and later on extended to the districts of the Circars, East Godavari, West Godavari, Kistna and Guntur. The societies of Malabar worked till the end of the year 1946-47, but those of the Circars were suspended from operation after having worked for two or three months.

There were in 1946-47, 274 such societies in the districts mentioned above, with a membership of 3·13 lakhs and a paid-up share capital of Rs. 166·34 lakhs. Total purchases and sales during the year were Rs. 10·06 crores and Rs. 10·57 crores respectively. Detailed figures relating to their working are given below.

TABLE XLV

1946-47

| | Malabar | West Godavari | East Godavari | Kistna | Guntur |
|---|---|---|---|---|---|
| Number of societies .. | 106 | 37 | 53 | 46 | 32 |
| Number of members .. | 177970 | 29600 | 59560 | 22224 | 23933 |
| | | (Rs. in Lakhs) | | | |
| Paid-up share capital .. | 46·59 | 31·46 | 43·45 | 22·41 | 22·43 |
| Borrowings outstanding from Central Banks .. | 18·63 | — | — | 1·18 | — |
| Borrowings outstanding from other sources .. | 35·34 | 0·68 | 0·68 | 0·36 | 0·46 |
| Other funds .. | — | — | — | 4·74 | 0·07 |
| Working capital .. | 100·56 | 32·14 | 44·13 | 28·69 | 22·96 |
| Value of purchases .. | 793·07 | 75·83 | 74·35 | 50·61 | 11·94 |
| Value of sales .. | 829·26 | 85·52 | 81·54 | 48·51 | 11·79 |
| Net profit .. | 40·09 | 4·62 | 4·02 | 1·52 | 0·28 |
| Net loss .. | — | — | — | 0·18 | 0·05 |

The societies in Malabar which have been doing more systematic work than societies in other districts, acted as agents of Government in the importation of food grains and controlled articles, in addition to their work of procurement. They undertook the distribution of food grains through ration shops also, and for that purpose maintained about 2,615 ration shops, out of the 2,743 ration shops of the district. They have thus been able virtually to supplant the private merchant. This has caused a hue and cry

among the traders who demand that these societies should be wound up. Among co-operators too there is much doubt regarding the ability of these societies to continue, once the control system is completely abolished. Government have therefore suspended their policy of extending these societies to other districts and are at present engaged in watching the progress of the existing societies and the utility of the service they render.

By 1948-49 the total number of these societies had dwindled down to 122, as many of them, in accordance with Government policy, were converted into marketing societies, credit societies or rural stores. Most of the societies thus re-organized were in the Circars. The registration of some of the societies there, which could not be converted, was cancelled. In East Godavari and Chingleput districts these societies were entrusted with the work of procurement.

*Co-operative Dairying and Animal Husbandry*: Co-operative dairying of the State consists of milk supply societies and unions most of which function in and around large cities and towns. In addition to these, there are a few societies started for the salvage of dry cows and a few for cattle breeding.

The number of milk supply societies at the end of the year 1948-49 was 448, and the number of unions, 30. Out of the 448 societies, 299 worked as feeders to the Unions while the others remained as independent units supplying milk direct to the consumers. These societies had a membership of 39102 and a paid-up share capital of Rs. 5·41 lakhs. They sold, during the year, milk of the value of Rs. 69·70 lakhs, of which Rs. 35·06 lakhs worth of milk was sold to the Unions. The total value of milk supplied to consumers by these societies and unions together was Rs. 127 lakhs. The quantity of milk supplied was 28 million lbs. as against 32 million lbs. in 1945-46. The drop is to be attributed to the abandonment by the Corporation of the scheme of supplying free milk to expectant mothers and school children in the City of Madras, the cost of which was met by the Government, and the termination of the Army contract in Madras and Coimbatore.

Most of the Unions supply milk to State hospitals and jails and in some cases to municipalities. Thus the milk supply unions of Madras, Vellore, Coimbatore, Madura, Calicut, Tanjore, Salem and Cuddalore supplied milk to the respective hospitals and jails.

Of the Unions in existence, three are most prominent, the Madras Union, the Coimbatore Union and the Madura Union. The Madras Union has now 79 individuals and 104 societies as members

and a paid-up share capital of Rs. 89,764. Its average daily production of milk ranges between 16,000 and 20,000 lbs. During 1948-49 its purchases of milk were valued at Rs. 19·00 lakhs and its sales at Rs. 23·08 lakhs. The societies affiliated to the Union are, some of them, located in the city and the others in the outlying villages of the Chingleput district. Its central depot is at Ayanavaram, a suburb of the city, where milk is collected and pasteurized. Distribution is through 40 depots scattered all over the city and through delivery boys. The Union has undertaken also the function of supplying cattle feeds to the affiliated societies, through a number of sales depots in the city and the villages. With the aid of a Government grant, the Union has built some milking sheds at milking centres in the Chingleput district, where milking is conducted by the societies located there under supervision. Three sheds have been completed and 7 more are under contemplation.

The Coimbatore Union is the second biggest union in the State and had, in 1946-47, 50 members and a paid-up share capital of Rs. 17,160.[2] Its purchases in 1946-47 were valued at Rs. 8·87 lakhs and its sales at Rs. 10·51 lakhs. The value of milk sold in 1948-49 was Rs. 7·25 lakhs. Just as in Madras, this union also undertook the supply of cattle feed to members and maintained two stud bulls for the improvement of breed.

The Madura Union and the other unions at the headquarters of districts did similar work, but on a smaller scale. The purchases and sales of the Madura Union had values of Rs. 3·51 lakhs and Rs. 3·88 lakhs respectively, while the other unions at Vellore, Chittoor, Mangalore, Calicut and Tanjore had business amounting to Rs. 1 lakh each.

To popularize the co-operative movement in dairying and to ensure an adequate supply of good milk in cities and towns, the Government have offered certain concessions to unions and societies and to their members. The members are granted interest free loans, repayable in 12 months, for the purchase of milch cattle, and interest bearing loans are given to unions for the purchase of motor transport. In addition, the free services of veterinary officers and of breeding bulls maintained in veterinary institutions are granted. Societies are permitted to use vacant sites within municipalities as milking centres, and municipalities and district boards are permitted to erect cattle sheds and lease them to societies or unions. They are also permitted the use of waste land for growing pasture and

2. Figures for the later years are not available.

the removal of grass free of charge from reserve forests. They are exempted from the sales tax and from audit fees, either fully or partly.[3]

Some of the Unions have introduced the milk recording scheme designed to encourage the production of milk. There are 268 animals under the scheme, and in each case a record of milk production is kept. Prizes are given to the owners of the animals which produce the best results.

*Co-operative Socities for the salvage of dry animals*: There are two such societies in existence, one for the salvage of dry cows in the city of Madras and the other for the salvage of dry buffaloes. The Cow Society has its salvage farm in Kambakkan Kancha, and the buffalo society in Vattambedu in Nellore district. The cow society has a membership of 462 at present and sent 217 cows to the farm during the year. A small salvage fee is charged, and the animals are returned to the owners when they are about to calf or when the owners demand them. Government have given certain grants for the construction of a well and a dipping tank and the installation of an oil engine pump at the Kancha. The Corporation of Madras has agreed to make a free grant of money (Rs. 10,000) for the construction of a shed.

The buffalo society was started later (in 1946-47), and is designed for salvaging dry she-buffaloes of the city of Madras. The dry animals are collected by the Milk Supply Union and sent to the farm. The salvage fee is Rs. 6 per month per country buffalo and Rs. 9 per month per murrah buffalo. 84 buffaloes were sent during the year. Provision is being made for two breeding buffaloes and the cultivation of fodder crops, for which some temple lands are being leased.

Proposals for the formation of similar societies in Madura, Tanjore, the Nilgiris, Coimbatore and Malabar are under consideration.

*Cattle Breeding Societies*: There are at present 22 cattle breeding societies, one of the latest being at Mecheri in the Salem District. The total membership in these societies, as on 30th June 1949, was 2092 and the paid-up share capital, Rs. 27334. Stud bulls and buffaloes are maintained by these societies and their services made available to the animals belonging to both members and non-

3. A three year plan of dairy development also has been inaugurated in eight districts under the control of a Dairy Development Officer. Milk production under the scheme is expected to be 144600 lbs. per day at the end of the third year.

members. The number of stud bulls maintained were 114 and the number of stud buffaloes, 3. They rendered 1663 services during the year, benefiting 345 members. The number of improved calves produced was 538. The services of buffaloes were given free.

Of these 22 societies, six did good work, and among them three deserve special mention, the Saryari Buffalo Improvement Society in the Coimbatore District, the Anchetty Cattle Breeding Society and the Mecheri Cattle Breeding Society in the Salem district. The Anchetty Society maintained nine stud bulls approved under the Premium Scheme, and the number of services rendered by them were 711 during the year. Some members are selected for taking charge of these stud bulls and maintaining them in proper health and strength, and for meeting maintenance charges they are permitted to appropriate for themselves half the proceeds of the fees collected. For the purchase of these stud animals, the Government and the Central Bank and sometimes the District Board give subsidies.

*Other Types of Agricultural Co-operation* : Other types of agricultural co-operation include Supply Societies, Agricultural Demonstration and Improvement Societies, Land Reclamation Societies, Colonization Societies, Consolidation Societies and Kudimaramat and Irrigation Societies. A few of each type of these societies exist in the State, more by way of illustration and example than as full fledged representatives of different lines of the co-operative movement.

Among these, supply societies are more numerous than the others, having had an earlier origin. The function of supply is as important in the organization of agriculture as the function of marketing and credit supply, and very early in the history of the non-credit movement, supply societies started working. In the beginning, sale and supply were centred in the same society and even today the bulk of the supply societies are of that nature. As the by-laws of the credit societies also permitted the undertaking of this function, some credit societies too have supply branches attached to them. Some agricultural improvement societies too have undertaken the supply of seed and manure. This is the reason why in the Statistics relating to the Co-operative Movement, supply societies as such do not figure. Recently however under the seed multiplication and manure and implement supply schemes the supply function has overshadowed the other functions of the combined societies that they have virtually become supply societies. A few separate manure supply societies have also been formed.

The commodities supplied by these societies are manure, seed, implements, cart tyres and axles. Since all these are producers' goods, the societies discharging this function are rightly classed as producers' societies. Under the seed multiplication schemes, the societies undertook the supply of cotton and paddy seed, and in 1942-43, 14 special societies in N. Arcot, 2 in Malabar and 8 in Salem were started to do the work of paddy seed multiplication. Cotton seed multiplication was started in that year in the districts of Coimbatore, Salem and Bellary, and steps were taken to start such in Tinnevelly and Ramnad too. Some sale societies and some credit societies in these and other districts too were engaged in the distribution of seed. The value of seed distributed through these societies in 1944-45 was Rs. 69,412 as against Rs. 106,501 in 1943-44. The values of manure, implements, tyres and axles distributed in 1944-45 were Rs. 10·07 lakhs, Rs. 1·66 lakhs, Rs. 3·42 lakhs and Rs. 53,108 respectively as against Rs. 8·78 lakhs Rs. 28,547, Rs. 109,568 and Rs. 9,209 in 1943-44. For 1945-46, the amounts were Rs. 8·55 lakhs, Rs. 17,057, Rs. 6,780 and Rs. 3,570 respectively. These were exclusive of the supplies made by Agrciultural Demonstration societies.

The purpose of Agricultural Demonstration and Improvement Societies is to demonstrate to the cultivators improved methods of farming. They act in conjunction with the Agricultural Department and give expert advice to the farmers. There were 56 such societies, with a membership of 5477 and a paid-up share capital of Rs. 1·12 lakhs, in 1948-49. There are also 7 societies for Agricultural Demonstration, and they cultivated 116 acres of land in 1945-46 for demonstration. The most outstanding of such societies is perhaps the Lalgudi Sivaghanam Agricultural Society in the district of Trichinopoly. Under the Grow More Food Campaign their numbers have greatly increased. While there were only 35 societies in 1937-38 and only 43 in 1940-41, at present there are 56. They have been supplying improved seed and manure to members as well as non-members.

Land Reclamation Societies are of recent origin, and were started mostly in the Cauvery Mettur Project area of the Tanjore and Trichinopoly districts. Their function is to bring new land under cultivation, and so are started in areas of special facility. In the Cauvery Mettur Project area 15 such societies have been giving special loans to members for reclamation work. On 30th June 1947 there was a total membership of 3,661 in the 19 societies, of whom nearly ¾ were actually engaged in reclamation work. Their paid-up share capital amounted to Rs. 38,341 in 1946-47 and

land reclaimed since the beginning of the scheme till 1945-46 had an extent of 11,239 acres, of which 3,202 acres have been actually cultivated.[4] Lack of godown accommodation prevented the pooling of the produce of members for sale. Arrangements are however being made for the construction of one godown for each society at a cost of Rs. 3,000, half of which would be given by the Government as a grant, and the other half as a loan. To help the reclamation society, a special staff has been sanctioned by the Government. The most successful of these societies is the Kuhoor Land Reclamation Co-operative Society in Trichinopoly district.

*Land Colonization Societies*: These societies originated with the sanctioning by Government of the scheme to settle landless agricultural labourers on new land. By the end of June 1947 there were 26 such societies, working in 8 districts of the State. In the early years the Revenue Department was in charge of these societies, but from 1st July 1945 all of them, except two (in Chingleput district), were put under the administrative charge of the Co-operative Department. There were 3,075 colonists in 1948-49 in the 26 societies, under the Co-operative Department, holding an area of 10,701 acres, of which 9,951 acres were cultivable. The area actually cultivated from 1946-47 onwards has been 8,891 acres. Lack of irrigational facilities and the failure of the monsoon are said to have retarded progress hitherto, but since the colonists are taking advantage of the accelerated scheme of the Government for sinking wells, greater progress may be expected in the future. By the end of 1945-46, 94 irrigation wells had been sunk under the scheme, by three societies in Coimbatore and 11 in North Arcot. Loans for the purpose are being freely sanctioned by the Registrar. In addition to cultivation, the colonists have developed certain subsidiary occupations like mat-weaving, tape weaving, poultry farming, vegetable gardening, etc.

Land Colonization Societies for ex-servicemen and ex-toddy tappers too are being formed under the scheme of re-settlement. The Board of Revenue have drawn up 50 such schemes for ex-servicemen, involving an area of 50,000 acres and 6,300 ex-servicemen. Twenty-two of them were approved by the Government, while the others are pending sanction. Under the approved schemes fourteen land colonization societies were formed, but five of them had to be abandoned on account of losses. There are now 9 active societies, scattered in West Godavari, East Godavari, Kistna, Kurnool, Chingleput, Coimbatore, Salem, Tanjore, Guntur and Trichi-

4. Figures for later years are not available.

nopoly. The administrative control and supervision of these societies is in the hands of the Director of Resettlement and Employment. The total membership is 836 of whom 518 are active colonists. They brought 1,344 acres under cultivation. Four societies have been formed for ex-toddy tappers in Salem District.

In these Colonization Societies, lands are not assigned to individuals, but to societies which reclaim them and provide irrigation facilities. Other amenities too are provided by the societies, and the members are induced to cultivate the land and also start subsidiary occupations such as cattle breeding, poultry farming, dairying, etc.

*Kudimaramat and Irrigation Societies*: There were 18 irrigation societies working in 1948-49 in the districts of South Arcot, Guntur, Kistna, Tanjore and Tinnevelly. They had a total membership of 2,219 and a paid-up share capital of Rs. 11723. Their function is to undertake kudimaramat work, such as, repairs to irrigation channels, tanks, etc., and also regulate and supervise the distribution of water. All ryots in the ayacuts of these channels are eligible for membership. The area covered by these societies was 7,694 acres and the members benefited numbered 756.

*Consolidation Societies* : There were 26 consolidation societies in the year 1940-41, but no published information is available as to how many of them are in existence at present. Possibly some of them or all of them are in a state of suspended animation, for the reports of the Co-operative Department subsequent to 1940-41 are singularly silent regarding their activities. There is a wide spread belief among the Revenue and Co-operative officials of the State that the evil of fragmentation is not widespread here, and so there has not been much enthusiasm on their part to start such societies. Compared with the Punjab and certain other States of the North of India, the record of Madras in this respect is poor indeed, but much of it has to be attributed to the defective realization of the spread of the evil.

*Co-operative Farming* : Co-operative farming societies are of very recent origin and are still in their experimental stage. There are only two societies of the kind at present, both of which were formed in 1949. The first society was started in Marudur, a village in Trichinopoly district, with the ostensible purpose of fostering 'better relations between the landowner and the tiller of the soil'. The second society is located in the village of Nelvoy in the Madurantakam taluk of the Chingleput district. The first is a colonization society which has taken over from private owners 390 acres on lease for a period of twenty years. After setting apart 10 acres

for such purposes as raising seed and providing threshing floor, the remaining 380 acres have been sub-leased by the society to landless labourers at the rate of 10 acres per labourer. They are expected to cultivate the areas under the direction of the society and with the aid of a Senior Inspector of Co-operative Societies and an Agricultural Demonstrator, whose services have been placed at the disposal of the society by Government.

Each sub-lessee is given financial aid to the extent of Rs. 250, for the purchase of cattle, manure, seed and implements. The finance needed for this purpose as well as for meeting the general expenses of the society is partly advanced by the Government and partly by the District Central Bank of the district. The Government allotment is of the amount of Rs. 80,000 and the advance made by the Central Bank of the sum of Rs. 40,000. Government have stood guarantee for the latter loan also.

The control of the society is in the hands of a Board on which Government representatives, landowners and tillers of the soil sit. The society is run as a scheme in the Grow More Food Campaign, and so the Central Government meets half the cost of the scheme.

The Nelvoy Society was formed later, but is worked on the same lines. The total acreage leased from pattadars is 400 acres, and that acreage is divided among fifty landless labourers who have been admitted as members. All concessions to which Land Colonization Societies are entitled are given to the new society. These concessions contain a grant of Rs. 10 towards share capital per member, a five-year interest free loan of Rs. 25 per acre for reclamation, a fifteen year interest free loan for agricultural implements, a half grant of Rs. 125 and an interest free loan of Rs. 125, together making up Rs. 250, for the purchase of cattle and free supply of seed and manure. So far subsidies totalling Rs. 8,700 and loans amounting to Rs. 11,500 have been granted to members. The membership which is at present 50, will soon be increased to 80, by admitting 30 more, so that there might be the fullest utilization of the leased acreage. Each member will have at his disposal only 5 acres, but since sources of irrigation are near and are sought to be utilized with mechanical aids, the five acres are supposed to form an economic holding. In addition to grain which will be raised as two crops, vegetables, onions and plantains will be grown, and there will also be some raising of dairy cattle and sheep.

Both the societies are in their initial stage and will require a few years of growth before they can be adjudged successes or failures.

## Chapter XVI

# THE AGRICULTURAL DEPARTMENT

The idea of starting provincial departments of agriculture to function along with the Government of India Department of Agriculture was first suggested by the Famine Commission of 1880. Their recommendation in this behalf was far-reaching and placed emphasis on the initiation of research and education both at the centre and in the provinces. But the Government thought that the preliminary work of collecting economic and statistical data had first to be done before effort could be directed along the lines indicated. For this purpose the Central Department of Agriculture was reorganized and provincial agricultural work was started. In the beginning work was confined to agricultural enquiry, to famine analysis and the tabulation of village statistics, but after the visit of Dr. Voelkar, which took place towards the close of the century, the importance of research came to be recognized and an Agricultural Chemist to conduct research and an assistant to organize education were appointed. In 1901 another Famine Commission called attention once more to the urgency of the agricultural problem and recommended immediate action. In response to this the forward policy in agricultural development was initiated in 1905. Full-fledged provincial agricultural departments thus date from 1905.

Prior to this, interest in agricultural experiments and education had been awakened in Madras by the establishment of a farm by Sir William Denison, the then Governor, in 1863, and the conversion of this farm into an Agricultural College at Saidapet in 1876. This early work conducted under the supervision of able men had the effect of properly preparing the ground for the work of the department established later. Some work in connection with the control of pests affecting sugarcane, groundnut and pepper also had been carried out under the supervision of an Economic Botanist before the year 1905.

The re-organization of the provincial department for the conduct of research and education in 1905 was quickly followed by the establishment of the Agricultural College and Research Institute at Coimbatore in 1907. At this institute the intention was to conduct research which would be of provincial and local importance, while the conduct of fundamental research of all-India importance was to be centred at the Agricultural Research Institute established at Pusa in 1905. The College was intended to train

young men in the science of agriculture and thus create the personnel necessary to fill the subordinate ranks of the agricultural department.

Since its establishment, the department has been extending its work both intensively and extensively, and both on the research side and on the education and propaganda side vast expansion of activity has taken place. The Government of India Act of 1919 made agriculture a transferred subject and placed it under a popular minister. The Indian Central Cotton Committee was set up in 1921 to improve the production and marketing of cotton and the Imperial Council of Agricultural Research was established in 1929 on the recommendation of the Royal Commission on Agriculture to direct and co-ordinate research. The funds set apart by these two organs have helped the State department to embark upon specified schemes of research.

With the inauguration of provincial autonomy in 1937 a new opportunity was given to provincial agriculture to expand in its own way and secure the funds needed for it on a more liberal scale. But the Economic Depression, the war which came close on its heels and the disorganization of world economy — all tended to hamper activity and slow down progress.

The conquest of Burma by the Japanese in 1942 and the cutting off of rice and pulse supplies created an acute problem for the State, to meet which the Agricultural Department was saddled with the conduct of the Grow More Food Campaign. For the proper discharge of this new activity, the department has been greatly expanded and altogether new lines of work have been undertaken. In addition to more intensified propaganda and demonstration, certain State trading schemes have been inaugurated for the cheap and prompt supply of seed, manure and implements, and the department has more or less taken over from the Revenue Department the function of granting taccavi loans.

At present the functions of the department comprise education, research, demonstration and propaganda, organization and control of marketing, grant of loans and State trading. Under research the sections are Agricultural Chemistry, Entomology, Mycology, Crop Breeding and Botany, Agricultural Engineering and Agricultural Industries. Each section has a full staff of workers, some of them engaged in actual research and others engaged in field work.

For work in the districts in connection with demonstration and propaganda, there are Deputy Directors of Agriculture in charge of circles or regions and District Agricultural Officers in

charge of each district. Under them for every taluk there is a demonstrator who works with the assistance of maistries and fieldsmen. Some special Deputy Directors and special District Agricultural Officers are in charge of work connected with the Grow More Food Campaign, and some others in charge of special work conducted under the direction of the Imperial Council of Agricultural Research. Under the Grow More Food Campaign the number of demonstrators, maistries and fieldsmen has been greatly increased.

A State Marketing Officer is attached to the Department, and though he is under the administrative control of the Director of Agriculture, he works under the direction of the Marketing Adviser to the Government of India and submits State marketing reports to him.

*Agricultural Education*: Agricultural education is given at the two Agricultural Colleges maintained by the Government, one at Coimbatore and the other at Bapatla. The Coimbatore College is affiliated to the Madras University for the B.Sc. (Ag.) degree course and the Bapatla College to the Andhra University for a similar course. The course covers a period of three years and comprises a theoretical and practical study of Agriculture, including Agricultural Economics and Farm Management, Agricultural Botany, Agricultural Chemistry, Agricultural Zoology, Agricultural Engineering and Animal Husbandry and Hygiene. About 192 students are admitted every year into both colleges together. Teaching at the Coimbatore College is carried out in the respective subjects by the heads of the research sections, under a scheme recently inaugurated, of amalgamating the teaching and research sections. This arrangement brings the two sections into closer contact with each other and makes the benefit of the research conducted available to the students. The Principal of the College is also the head of the Research Institute at Coimbatore and the Superintendent of the Farm. The students are taken out on week-end short trips to the adjoining villages and also on longer tours during the months of October and January. The Bapatla College, being a new college, has not had much development yet. The first batch of students were sent up for the First Examination in B.Sc (Ag.) only in 1946.

In addition to the B.Sc. (Ag.) course, shorter courses in Practical Agriculture are also given at the Coimbatore College, and also at the research station at Nandyal in such subjects as Farm Management, Horticulture and Vegetable Gardening, Insect Pests and Diseases, Dairying, Care of Animals, Bee-keeping, Jaggery

Making, Farm Implements and Machines and Manures and Malt making. At the Kovur research station a short course in Fruit Culture is given. These courses are attended by 15 to 30 students annually, and also by upper subordinates and maistries of the department. Under the re-settlement scheme for demobilized military personnel, vocational training in agriculture as a 3 months' course is given at Coimbatore by batches. In 1945-46, nearly 95 ex-soldiers were thus trained.

To train agricultural labourers in proper methods of cultivation certain Farm Labourers' Schools are maintained, at which both adults and boys are trained. In 1947-48 there were four such schools in the State, at Anakapalle, at Palur, at Coimbatore and at Samalkot. Boys are given regular training during the day, while the adult workers attend the night classes. Some 25 to 30 boys ordinarily receive the training at each centre.

The Agricultural Middle Schools which were closed down some time back are now being revived.

Post-graduate training is given to the officers of the department at the Imperial Agricultural Research Institute, New Delhi, and some selected officers are sent abroad to the United Kingdom and the U.S.A. for advanced study in some branches of the science. In 1945-46 eight officers were thus deputed.

*Research*: Research is conducted by specialist officers, with the aid of assistants, at the Central Institute located at Coimbatore, and also at the Research Stations scattered all over the State. There are nearly 32 such research stations, in all of which research is devoted to local problems and crop experiments. At the Central Institute, in addition to crop breeding, research is also conducted in Agricultural Chemistry, Entomology, Mycology, Systematic Botany and Agricultural Engineering.

Chemical research is primarily directed to the analytical study of soils, their origin and composition, their structure, moisture content, etc., and ways of improving soil fertility and transforming alkaline soils into fertile soils through appropriate action. Samples of soils, manures, water, food, fodders, produce, etc. are all analysed on the requisition of private parties or under the directions of the department.

Entomology and Mycology deal with plant pathology and make a study of the pests and diseases which affect the crops. The entomology section studies the characteristics of pests which affect crops and stored produce with a view to controlling them. Work is progressing on paddy pests, pests of cholam, of sugarcane,

of vegetable crops, of cocoanuts and other economic plants, and also on those pests which affect stored ginger, turmeric, sweet potato, etc. Sprays and spraying machines have already been designed for controlling some of these pests. The mycology section deals with the fungus diseases of plants which when neglected cause heavy damage to the growth and yield of crops. The paddy blast, the paddy food rot, the sorghum smut, the broom rape on tobacco, the sugarcane mosaic disease, and some of the diseases affecting the cotton crop are the lines along which research is progressing. The method of treatment naturally consists in the isolation of disease-resistant strains and the treatment of seed to fungicides. Treated seed is being distributed to ryots, and in the case of the cholom crop, nearly 39·5% of the area sown to this crop was sown with treated seed in 1945-46. Control of other diseases has been attended with varying measures of success.

Under botanical research the most important line of activity is crop breeding, under the direction of the specialists in each crop. Most of the main crops of the State have now a specialist engaged in improving breed, and research in this direction is carried on both at the Coimbatore Institute and at the mofussil research stations. Obviously the greatest attention is being given to paddy, with a view to discovering high yielding and disease-resistant varieties suitable for different local and soil conditions. Work on this is going on in ten of the research stations in addition to the work done at Coimbatore. About 139 new strains have been evolved or isolated, with a duration of growth ranging from 90 to 200 days, and suitable for different seasonal conditions. In 1947-48 improved seed distributed to the ryots amounted to 9030 tons. The yields attained at the agricultural stations with the new strains are considerably higher than the normal yields in cropping, in some cases the difference being as high as 1000 lbs. per acre. Proper manuring and scientific culture have no doubt contributed to this result. However under the handicaps imposed on actual cultivation the same results may not be achieved, still there can be no doubt regarding the superiority of the improved strains or the economic benefit their adoption will confer on the ryots. In actual cultivation an increase in yield of 10 to 25% is invariably got. The more prominent of the new strains introduced into cultivation are G.E.B. 24, CO2, CO7, and ADT 11. These are widely prevalent all over the State, and in the districts of East Godavari, West Godavari, Kistna, Tanjore, Coimbatore, Salem, Madura and North Arcot they cover nearly 3/4 of the area under paddy. But on the West Coast the new strains have not become popular. On the whole the total area under improved paddy is estimated at 5

million acres.[1] Research in paddy cultivation is directed also to agronomic studies, such as treatment in the nursery, reduction of seed rate and proper method and time of transplantation, to manurial experiments and irrigational methods.

Other crops for which there are specialists and in which breeding experiments are conducted are the millets, pulses, oilseeds, cotton, tobacco, sugarcane and fruits. For millets 50 new strains have been evolved and popularized in the Ceded Districts, Salem and Coimbatore. Six new strains have been evolved for irrigated cholam, CO4 (Red), CO5 (yellow), CO6, 7, 8 and CO9 (white), and are spreading in those localities where their superiority has been established beyond doubt. In cumbu cultivation three strains have become popular, P. T. 700, P. T. 367 and P. T. 2229. These have been renamed Cumbu CO1, Cumbu CO2 and Cumbu CO3 respectively. For ragi also three strains, now called Ragi CO1, Ragi CO2 and Ragi CO3, have been popularized in actual cultivation.

Research on pulses is carried on at Coimbatore, Vizagapatam and Salem, on redgram, blackgram, cowdea and certain other legumes. Since work on these crops was started only recently, new strains are still in their initial stage of multiplication. The oilseeds selected for work are groundnut, castor, gingelly and cocoanut. In groundnut three strains, viz., TMV. 1, TMV. 2 and TMV. 3 have been introduced into cultivation, and in 1947-48 pods supplied amounted to 30360 lbs. Yield trials, hybridization experiments and the selection of large seeded types are at present going on. Attempts are also being made to control pests and fungus diseases and discover improved methods of curing and storage. In gingelly the new strain SIP9 and Crosses 6 and 8, and in castor RC No. 115, RC No. 59-8-1 have been multiplied and distributed to the ryots. Work on cocoanut is financed by the Indian Central Cocoanut Committee, but conducted at the research stations on the East and West Coasts. To a limited extent seed cocoanuts and seedlings are distributed every year from the stations on the West Coast. Varietal studies are here carried on with a view to the discovery of strains of high copra content, and hybridization experiments are going on with Java, Andamans and Siam varieties.

Experiments on cotton are carried on at nine stations on the different types. The types selected for work are the Cambodias, the Mungari cotton, the Nadams, the Karunganni, the Westerns

1. Rural Problems in Madras.

and the Northerns. Some of these schemes are financed by the Indian Central Cotton Committee and the others by the department as of local importance. Since work on cotton has been going on for some years, many new strains have been evolved and their cultivation has spread in special localities. In the cultivation of Cambodia cotton, three new strains, CO3, CO4 and A4463 have spread widely in Salem, Ramnad, Tinnevelly, Madura and South Arcot. For the dry cotton areas, the varieties selected are K1 among 'Tinnevellies' and H1 among 'Westerns'. They have spread over an area of 700,000 acres. H1 is particularly popular in the Ceded Districts. In research on cotton the aim has always been to maintain a balance between medium stapled and short stapled cotton and to induce a greater production of long stapled varieties. Production of long and medium stapled cotton has now reached the figure of 2¾ million bales a year.

Research in tobacco is directed to increase of yield and better quality in the leaf. New varieties of tobacco suitable for cigarette and cigar manufacture are also being introduced. Sugarcane breeding is carried on at Coimbatore in the Sugarcane Breeding Station maintained by the Central Government, and seedlings are sent to all parts of India from there. Very valuable work has been done by the two famous specialists, Dr. Barbar and Sri T. S. Venkataraman, and as a result, the C419, a thick hybrid cane, occupies nearly 90% of the area under that crop in the State. In South Arcot C349, C281 and POJ 2878 are widely grown. C290, C429, C449 and C527 are popular in sugar factory areas. But cultivators have to rely on this station for all seedlings, and to facilitate their transport special railway wagons have been designed.

Work on fruit culture is of more recent origin, and the research farm at Kodur and the stations at Coonoor and Kallar are specializing in it. The fruits selected for work are citrus, mango, apple, pears, peaches, oranges, custard apple and papaya. Grafting experiments are conducted in mango, papaya and custard apple, and nurseries maintained for the supply of seedlings. In the case of citrus and oranges the relative merits of the seedling plant and the budded plant are being investigated. The fruits grown on the farms are exhibited at the fruit shows and also sold to the public.

Research in agricultural engineering was started on the specific recommendation of the Royal Commission on Agriculture, and a Research Engineer has been in charge of this work. Many new implements have already been designed, and some of them are being produced on a commercial basis. Reference has already

been made to some of these in the chapter on Implements and Machinery. Two improved iron ploughs, manufactured by Messrs. P. S. G. & Sons to the specification of the Department are P. S. G. No. 16-A and 16-B. They were priced in the pre-war period at Rs. 3-10-0 each. Another new plough which is being tried now is P. S. G. No. 15. Of other implements designed special mention may be made of cultivators, puddling implements, green manure tramplers, mechanical seed drills, the circular mhote water-lift, guntakas, turmeric polishers, Chinese groundnut decorticator, the adjustable double mould board plough and the bund former. The object of research is to make available to the cultivator a simple, but efficient, implement, within his financial capacity. When such implements are designed, manufacturing concerns are induced to produce them at economical rates and sell them directly to the ryots or through the depots maintained by the department. The supply of spare parts also is undertaken on an adequate scale.

*Demonstration and Propaganda* : The main purpose for which the agricultural department is established, being to improve cultural practices and expand production, demonstration and propaganda become crucial activities of the department. It is through them that the results of research are brought to the doors of the cultivators and their enthusiasm raised for adopting them in actual cultivation. The district staff of the department is mainly intended for this work, and though the higher officers of the cadre of Deputy Directors and District Agricultural Officers have the supervision and direction of the research stations located within their jurisdiction, their main concern is with demonstration and propaganda. However the Agricultural Demonstrator is the focal point in the organization. Ordinarily his jurisdiction extends to a whole taluk, and according to existing arrangements there is a demonstrator for each taluk. He has a depot at headquarters where seed, implements, manure, etc. are stocked for sale. He tours the villages, covering nearly 30 to 40 villages during the year. The work of demonstration is taken up each year with the help of maistries, messengers and fieldsmen, in 6 to 8 central villages, each with a group of 4 or 5 small villages attached to it. Other villages in the taluk will be visited only when there is a call. The Demonstrator maintains trial plots in select localities where improved methods, new strains, new implements, etc. are tested for a three year period, before their beneficial effects are demonstrated to the villagers. The trial plots are usually leased for the purpose, and cultivation is carried on under his supervision and management. There were in 1939-40, 1223 trial plots and 536 observation plots. Actual demonstration is conducted on demonstration plots, owned

and cultivated by the ryots themselves, under the supervision of the Demonstrator. Some select ryots are induced to try out the new methods, usually under the guarantee that they would be reimbursed by the Government for any losses incurred. There were in 1939-40, 8,988 demonstration plots in the State.* In addition specific demonstrations of the efficacy of improved implements or the use of a better manure, or compost making or preservation of manure and such like items are undertaken at the headquarters depots or on Government farms. The Demonstrator has in addition to visit villages which report pests and instruct the villagers as to the measures to be taken.

The work of propaganda is in charge of the District Agricultural Officer in each district, and he carries out this function with the help of demonstrators and fieldsmen. The main instruments of propaganda are lectures, radio talks, magic lantern shows, exhibitions and shows, agricultural vans and trains, journals, etc. The D.A.Os are now supplied with jeeps for quick transport and extensive organization of propaganda. Farmers are occasionally taken in groups to agricultural stations or demonstration plots to witness the results of improved methods. Festivals, conferences, meetings, etc. are availed of to organize exhibitions of superior implements, manures, seed, etc. and conduct talks to villagers about new methods. In 1947-48, 162 such exhibitions were organized.

Under the Grow More Food Campaign propaganda has been intensified and directed along the line of increasing the acreage under food crops. Additional staff has been detailed for the purpose and some new Grow More Food Journals in Tamil and Telugu are published — *Mezi Chelvam* in Tamil and *Padipantalu* in Telugu. The All-India Radio stations at Madras and Trichinopoly are periodically used for giving talks in English and in the vernacular on the supreme need to grow more food and the devices to be adopted for the purpose. In 1945-46, 23 such talks were given. A Villagers' Calendar and Guide is also published in English, Tamil and Telugu.

*Agricultural Marketing*: The marketing branch of the Agricultural Department was started only with the inauguration of the marketing department of the Central Government. Provincial Marketing Officers were then appointed to work under the direction of the Central Marketing Officer, now called the Marketing Adviser to the Government of India, and help him in the organi-

* Figures for later years are not available.

zation of marketing. His function now is to collate State data relating to marketing and make them available to the Central Marketing staff for the compilation of marketing reports, and to organize and supervise market committees for the more important crops. Marketing work is carried out departmentally as well as through co-operative societies and market committees. Departmental work at present is confined to organizing grading of produce and the collection and publication of market intelligence. Grading of eggs and oranges is being carried on directly and through the co-operative societies, and the grading of tobacco through the agency of the central marketing staff. Practically the whole quantity of tobacco exported now is certified under the 'Ag Mark' grade. Market intelligence is sent to the Agricultural Marketing Adviser to the Government of India, to the Commissioner of Civil Supplies, to the Commissioner of Police and to the Collector, Madras City, and to producers, co-operative societies, the trade and the departments of Government.

Market Committees have been organized for three crops viz., cotton, groundnut and tobacco under the Madras Commercial Crops Market Act, 1933 (Act XX of 1933). For cotton there are three market committees, at Tiruppur, Nandyal and Adoni, for groundnut, one at Cuddalore, and for tobacco, two, at Guntur and Bezwada. For the time being, the Bezwada Committee is under suspension, its functions being discharged by a special officer. These Market Committees regulate the marketing of crops, ensure the use of standardized weights and measures, provide godowns for storage, supply commercial information and market quotations to the dealers, make a record of transactions, grade the commodities and settle disputes. Since their advent many of the evils and defects associated with the marketing of these crops have been eliminated.

*State Trading and the Grant of Loans*: The trading schemes under the control of the department were organized in connection with the Grow More Food Campaign, and comprise seed, manure and implement distribution. The Government have sanctioned a permanent advance of Rs. 28 lakhs to the Director of Agriculture for seed distribution and an advance of Rs. 52 lakhs for manure distribution. Under the seed distribution scheme, seed multiplication is carried out in the case of paddy in 16 districts, Tanjore, East and West Godavaries, Kistna, South Arcot, Vizagapatam, Guntur, Chingleput, Chittoor, Madura, Tinnevelly, Nellore, Trichinopoly, North Arcot, Malabar and South Kanara. Improved seed is grown on government farms and also by arrangement on some ryot land and the whole of the stock is purchased by the depart-

ment and sold to ryots through depots at a selling price which does not cover overhead costs. The loss incurred thereby is met by a government subsidy. It is estimated that the ryots get seed at a concession rate of 10% below cost. Similar schemes of seed distribution apply also to cholam, cumbu, ragi and korra in some of the districts. Seed multiplication for cholam is carried on in Kurnool and Trichinopoly, for cumbu in North Arcot and Tinnevelly, for korra in Bellary and for ragi in Salem.

Under the manure trading scheme, oil cakes, artificial fertilizers and green manure seed are sold to ryots. According to existing arrangements the Director of Agriculture purchases the entire output of cake from the oil mills and distributes it among the agricultural depots and sub-depots, fixing district and taluk quotas. The taluk committee decides on the village quotas, in consultation with the agricultural demonstrator. The village committees, when appraised of the quota allotted to them, have to determine the quota for each ryot and issue a permit to each against the quantity of cake available in the depot. On production of this permit, manure will be sold on a cash basis to the ryots at the depot. The price charged excludes overhead charges as in the case of seed distribution.

In 1945-46, the total quantity of oil cakes thus sold was 117,045 tons and fertilizers, 15,665 tons. Green manure seed sold was of the quantity of 1,265 tons. In 1947-48 groundnut cake distributed was of the quantity of 161,051 tons and chemical fertilizers 57,000 tons.

The third scheme applies to the distribution of agricultural implements. Since the re-imposition of iron and steel control, the old arrangement of distributing part of the iron and steel quota, allotted to the State by the Government of India, to select firms and government industrial institutions, and selling the rest to ryots and blacksmiths, through agricultural depots, has been revived. The smithies are engaged in fabricating agricultural implements, all of which are sold to the department. The department arranges for their sale to ryots through depots. In 1945-46 sales thus effected involved a quantity of 11,331·19 tons of standard iron and steel, of which cart tyres accounted for 4,626·26 tons and axles, 763·5 tons. In 1947-48 the quantity thus distributed was only 6,787 tons.

For the easy purchase of seed, manure and implements by the ryots taccavi loans are given on a liberal scale at reduced rates of interest. Special officers of the department have been appointed to tour the districts and grant these loans. The rate of interest has been reduced from 6¼% to 5½%. The limits fixed for loans

are Rs. 100 in each case for machinery and Rs. 75 for seed or manure.

Free distribution of seed and manure has also been permitted. Seed is distributed to poor and deserving ryots in each district, subject to a maximum for each district of Rs. 200. Free distribution of manure was inaugurated in some taluks of Malabar and South Kanara in September 1946 to increase the short term paddy. The total area thus manured, during the year, was about 173,967 acres and the total quantity of manure supplied, 19,964 tons. The total value of increased produce, grain and straw, is estimated at Rs. 81,79,442, against an expenditure of Rs. 32,74,070. Data for the later years are not available.

*Expenditure*: The budgeted expenditure on the department on revenue account for the current year (1950-51) is Rs. 187·99 lakhs which is a little over eight times the pre-war expenditure. Since 1939-40 the expenditure has been steadily rising, the rise becoming more pronounced since 1942-43. In the post-war years it has been maintained on a higher scale than during the war years. The peak figure was reached in 1949-50 when, according to the revised estimates, the total expenditure was Rs. 240·89 lakhs. The expenditures incurred on the department for the years 1938-39 to 1950-51 are given below:—

TABLE XLVI

| Year | | Expenditure (in lakhs of rupees) |
|---|---|---|
| 1938-39 | .. | 20·61 (Accounts) |
| 1939-40 | .. | 20·24 |
| 1940-41 | .. | 20·79 |
| 1941-42 | .. | 21·62 |
| 1942-43 | .. | 32·78 |
| 1943-44 | .. | 38·29 |
| 1944-45 | .. | 48·11 |
| 1945-46 | .. | 74·06 |
| 1946-47 | .. | 105·69 |
| 1947-48 | .. | 116·93 |
| 1948-49 | .. | 126·73 |
| 1949-50 | .. | 240·89 Revised estimate |
| 1950-51 | .. | 187·99 Budget estimate |

The greater proportion of the current year's expenditure is to be on experimental farms, demonstration and propaganda, education, engineering and research. A phenomenal increase has been taking place in the item on demonstration and propaganda during the war and post-war years, mainly due to the Grow More Food

Campaign. This item alone has now reached the figure of Rs. 47·88 lakhs, which is more than double the expenditure on the whole department in the pre-war years. Engineering accounts for Rs. 65·15 lakhs, experimental farms and research for Rs. 25 lakhs and education for Rs. 13·95 lakhs. On all these items great increases have taken place.

The total expenditure on the department works out to about 5 annas per head of the State's population. This hardly stands comparison with the Federal Expenditure on agriculture, apart from State expenditure, in the U.S.A., of Rs. 30 per head.[2] If the expenditure on the other departments of Government too are included, such as the Veterinary Department, the Co-operative Department and the Irrigation Department, the figures will be 13 annas per head of the total population and Re. 1 per head of the rural population. Central Government expenditure on agriculture is at present estimated to amount to 1 anna per head,[3] and the inclusion of this amount will raise the first figure by just one anna and the second by slightly more than that.

This scale of expenditure, low as it is when compared to the U. S. expenditure, is found to be lower than the scale of expenditure in most other States of India. In the year 1944-45, for which year full figures for the other States are available, the Madras figure was 1·5 annas per head of the population as against 3·2 annas in Bengal, 2 annas in the United Provinces, 4 annas in the Punjab, 2 annas in the Central Provinces, 4 annas in Assam and 7·4 annas in Bombay. The absolute amounts for those States, along with the Madras figure, for that year are given below.

TABLE XLVII

1944-45

| | | Rs. |
|---|---|---|
| Bengal | .. | 130·62 lakhs |
| United Provinces | .. | 68·17 „ |
| Punjab | .. | 76·02 „ |
| Central Provinces | .. | 20·66 „ |
| Assam | .. | 28·24 „ |
| Bombay | .. | 102·44 „ |
| Madras | .. | 48·11 „ |

The post-war scale of expenditure in Madras has risen and has perhaps made some leeway; even so it is unlikely that it has equalled expenditure in those other States. For a pre-eminently agricultural State this scale of expenditure is doubtless inadequate.

2. Central Food Minister's Speech, New Delhi, 8-9-1948.

3. Ibid.

## CHAPTER XVII

# AGRICULTURAL PRACTICE

Agricultural practice is fairly uniform throughout the State and depends almost entirely on the timeliness and seasonal distribution of rainfall and the availability of irrigational sources. Where rainfall provides the water needed for cultivation, dry cutlivation is resorted to, while if there are irrigational facilities, wet or garden cultivation is practised. Under canal and tank irrigation as a rule wet cultivation exists, but garden cultivation depends on wells. The bulk of the arable land in almost every district, with the exception of Malabar and South Kanara, is dry land, which goes to show the great direct importance of adequate rainfall to the State as a whole. Irrigational sources too get replenished through heavy rainfall, and except in the case of canals fed by rivers this rainfall has to be local. In most districts rain every month is a prime requirement of a first class agricultural season. Actual cultivation proceeds from 8 to 10 months of the year in most localities, but there are certain months in which rainfall is absolutely essential for the initiation of major agricultural operations.

From the point of view of agricultural practice the State may be divided into 9 or 10 regions, as has been done by Dr. B. V. Narayanaswamy, viz.,[1] (1) Vizagapatam, (2) Northern Circars plains including the districts of East Godavari, West Godavari, Kistna and Guntur, (3) The agency tracts or uplands of East Godavari and West Godavari, (4) Nellore, Chingleput and South Arcot, (5) Tanjore, Trichinopoly and Tinnevelly, (6) Madura and Ramnad, (7) the central districts of Coimbatore, Salem, North Arcot and Chittoor, (8) the Ceded districts, (9) the West Coast consisting of Malabar and South Kanara and (10) the Nilgiris. Seasonal changes are more or less identical in the localities comprised in these regions, which identity conduces to a uniformity in agricultural practice. In all these regions, if the season is favourable, two crops on dry land and three on wet land are taken. The third crop on wet land will be rendered possible only in those areas where water is made available from irrigational sources. In Vizagapatam and the Circars the three crops are known respectively as *Punasa, Pedda* and *Paira.* In the Ceded Districts the first two

1. Report on Rural Indebtedness, 1945.

are called *Mungari* and *Hingari,* and in the Cauvery delta, *Kuruvai* and *Samba.* In Madura and Ramnad the early crop is called *Adi Kodai,* the second or long crop, *Adipattam,* and the third crop, *Masi Kodai.* The agricultural season roughly corresponds with the months of June to January in most districts, but earlier rains in April or May are needed for the preparation and ploughing of dry lands and the raising of seed beds in paddy. Sowing will start only after the south-west monsoon has set in. Heavy rainfall in June and July will facilitate the growth of the early crops which as a rule are harvested in August or September. On wet lands June and July are the months devoted to the operation of transplantation, and if the paddy is a short crop harvesting takes place along with the dry crops in August or September. Both on dry land and on wet land, except in the cotton areas, the early crop is a cereal, Ragi or Cumbu or some of the minor cereals on dry land, and paddy on wet lands. Intermixed with cereals in Vizagapatam and certain parts of the Circars gingelly also is cultivated as an early crop.

September and October are the sowing months of the second crop which on wet lands is, for the most part, long crop paddy, though in some localities of the Cauvery delta and the Godavari and Kistna deltas the process is reversed, the short crop paddy following and not preceding the long crop. On dry land the second crop is either one of the pulses, horsegram, greengram, blackgram or redgram, or tobacco or chillies. In the black cotton area cotton is grown as the second crop, even when the first crop is a cereal. The long crop paddy will be transplanted in six weeks and is harvested in January or February, while the short crop paddy requires only three weeks' growth for transplantation. Its growing season is just about three months.

The third crop is taken both on dry and wet land if water is made available either through rainfall or through irrigation. If there is moisture retained in the soil, a third crop is found possible, even in such a dry area as the Ceded Districts. The late crops are short crop paddy or cereals, like cholam or short duration cumbu. Other crops, such as cotton, tobacco, etc., are also grown in areas specially suited for their cultivation. Sowing is done in December or January and harvesting in February or March. The paira crops in Vizagapatam and the Circars and the masi kodai in Madura and Ramnad are all cases of the third short crop.

Taking the agricultural year as a whole, July to December are the busiest months for dry crops, for by December both crops are harvested and the third crop alone remains to be cultivated if

the seasonal conditions are favourable. For the wet crops the season extends into January or February. In the Cauvery delta, however, the third and short crop is harvested only in April.

For a prosperous agricultural season therefore there must be rain in April or May for the preparation of the soil, fairly heavy rain in June and July to facilitate the sowing and the growth of the early crops, good rain in August and September for the sowing of the second crop, in October and November to give strength to the standing crops and in December and January for the third crop. Both the south-west monsoon and the north-east monsoon must give rain to all the districts if agricultural prosperity is to be ensured.

*Manuring*: The value of manuring is realized by all cultivators all over the State, and if a cultivator can manage it, with the resources at his disposal, he will manure both dry and wet land. On dry land in the course of early ploughing and on wet land before transplantation, manuring is usually done. In gardens manuring is done only after the rains set in, and the process is repeated just before the gardens begin to yield. A common method in all the districts is to pen sheep or cattle for several nights before ploughing. The application of dung, ashes, village sweepings and other refuse, stored in heaps or pits, is also resorted to wherever possible. On wet lands green manures are grown and ploughed in before the long crop paddy and in the cultivation of sugarcane, tobacco and chillies. In Vizagapatam and in the Circars there is the extensive practice of applying patimannu (earth from old village sites) to the paddy fields, and even dry land is sometimes treated with tank silt if the soil is particularly sandy. In localities near forest areas green leaves and twigs are ploughed in and permitted to decompose before sowing or transplantation takes place. The use of oil cakes and artificial manures for the richer crops is gaining in popularity largely through the propagandist efforts of the Agricultural Department.

On the whole, however, it should be regretfully stated that adequate manuring is woefully absent. No quantitative estimate of the manuring conducted is available for any region or locality in the State, except the little information gathered in the Resurvey of Some South Indian Villages. But that information refers to such stray cases as cannot be made the basis of any useful generalization. Nevertheless there is sufficient evidence to show that the farms of India do not get the manure they hunger for. The widespread practice of burning cowdung as fuel, the unscientific method of preserving whatever farmyard manure is available, the low acre-

age under green manures, the low production and insignificant importation of oil cakes and chemical fertilizers, the large exportation of oilseeds and bones, all go to show that the quantity of manure made available to the farmers is wholly inadequate for efficient cultivation. This undoubtedly is the primary cause of low productivity in Indian agriculture.

The production of farm yard manure in the State is on investigation found to be sufficient for the purpose of manuring all the fields, both dry and wet, in an ample measure. The 16 million odd cattle in the State, according to the Cattle Census of 1944, the 5 million buffaloes and the 15 million sheep and goats will, even on a conservative estimate, based on Dr. Burn's estimate of droppings, produce annually not less than 159 million tons of dung and about 17·5 million tons of urine. If properly conserved these droppings should yield not less than 141 million tons of rotten manure, which will work out to nearly 4 tons per acre of cultivated land. If a further allowance of 33·3% is made for possible losses, there will still remain nearly 94 million tons, which will work out to nearly 2½ tons per acre of cultivated land. This rate of manuring, on the best authorities, is sufficient to give back to the soil the nitrogen, phosphoric acid and potash lost through cropping. The beauty of farmyard manure is that it is a complete manure, providing all the chemical foods in which soils are usually deficient and, in addition, organic matter and humus needed for the generation of the requisite biological activity. Further, it improves the mechanical texture of the soil, through flocculation, binding sandy soils and opening out clayey soils, preventing a too rapid loss of water through evaporation and drainage in the one case and permitting a better movement of sub-soil water upwards and the air downwards in the other. Dr. Leather has estimated the nitrogen content of the dry dung of Indian cattle to be 0·3%, of phosphoric acid to be 0·19% and of potash to be 0·17%.[2] Sheep dung is supposed to be richer as manure than cattle dung, having a nitrogen content of 0·69%, of phosphoric acid of 0·40% and of potash of 0·75%. Weight for weight, cattle urine is a richer manure than cattle dung. Dr. Voelcker's analysis of a sample urine revealed 1·16% of nitrogen content, but Dr. Leather subsequently found only a content of 0·87% of nitrogen. The difference is probably accounted for by the difference in feeding, for it is a well-established fact that the richness of the manure is correlated to

2. These figures are different from those given in *Rural Problems in Madras* by S. Y. Krishnaswamy, p. 116.

the feeding of cattle. That is why in recent years farmers in Britain have taken to a more liberal feeding of their cattle, the increased expenditure of which is more than recouped by the higher milk yield and the richer manure produced.

Unfortunately, however, farms do not get the full benefit of the manure produced within the farm itself, due primarily to the widespread practice of burning cow dung as fuel and the wasteful methods adopted in the storage of the rest. Dr. Burns has estimated that two-thirds of the manure produced is thus wasted, and only the remaining third is used on the farms. Even this seems to be an over estimate, for even on the basis of this quantity there should be manure at the rate of 1½ tons per acre of cultivated land, which general experience shows does not obtain. Practically no attempt is made to conserve cattle urine which, as mentioned above, is richer than dung. And dung itself is kept in loose heaps, with much air space left between the layers which causes quick decomposition and the release of the valuable nitrogen contained in it. Sun's heat dries it up into hard lumps and the rain washes a part of it away, with much resultant loss in quantity and quality. According to Mr. Kenny's estimate a third of the quantity is lost if stored in an unprotected state, whereas under protection the loss would not exceed a fifth, and nearly 10% more of organic matter is lost in an unprotected heap.[3] This is perhaps a low estimate of the loss, for C. Benson thinks that this practice is responsible for reducing the cattle manure available to the farm from 5 to 7 tons per head of cattle per year to about ½ a ton per year per head.[4]

It is clear therefore that immediate steps should be taken to effect the maximum utilization of farm yard manure on our farms. India has in this respect to learn a great deal from China and Japan, where, it is said, every scrap of natural manure produced on the farm is given back to the soil. China imports no artificial manures nor produces any, but the greatest care is taken with regard to natural manures, on which is practically built up the high intensity of her culture. India can do likewise if only she conserves her cattle manure in the same manner. The earth box method of preservation is said to offer great possibilities, and the Agricultural Department of the State has been engaged for some years now in popularising it. The merit of the method is that it will effect the maximum conservation of both urine and dung in

3. Kenny, John: Intensive Farming in India.

4. C. Benson. The Care and Management of Farm Manure in S. India (Bulletin of the Agricultural Department, 1912).

a thorough state of decomposition, intermixed with straw, dry earth or other litter and well pressed down by the feet of cattle. This will simultaneously solve the problem of manuring and the sanitation of Indian villages. But in spite of propaganda very few of the cultivators have so far adopted the method. In 1938-39 there were only 34,168 manure pits, 34,105 dry earth boxes and 65 loose boxes under the supervision of the Department. By 1947-48, the number of pits had increased to 155520. The slow burning characteristic of dung makes its use as fuel attractive to the village housewife, and traditional beliefs and practices make it still incumbent that dung be used as a cleansing agent in Indian houses. The sale of dung cakes in the neighbouring towns is a source of supplementary income to the poor cultivators, especially to the women folk, and so the practice is bound to be indulged in, as long as the knowledge that it will be more profitable to use it on the farm does not dawn on the village folk. More intensive propaganda and demonstration and, if need be, a measure of coercion in the form of prohibition alone will improve matters.

The fullest utilization of farm-yard manure in the farms of the State will, on the one hand, reduce to the minimum the expenses on manuring and, on the other, cumulatively improve the fertility of the soil. Most of our farms have reached the stage of maximum impoverishment, through hundreds of years of cropping, that unless adequate manuring is done, there will be no prospect of improving the yield. Our paddy fields especially tend to become heavier and heavier as the years roll by, levying an increasing toll on both men and cattle in the work of cultivation. The system of puddling and flooding the fields makes the texture of the soil finer every year, and unless manure which contains organic matter is added in order to make the texture coarser, both percolation of water and subsoil aeration will become more and more difficult. Farm-yard manure, in the form of composts and thoroughly rotten, contains enough of organic matter to do this, and its total effect on yield will be as good as the effects of the costlier organic manures, such as, green manures or oil cakes, and better than those of the chemical manures. Ammonium sulphate, for instance, gives a fine texture to the soil which goes only to aggravate the abovementioned tendency in paddy cultivation, and is therefore not so suitable as organic manures. This is primarily the reason why Madras cultivators generally are averse to the use of artificial manures. In the Resurvey of Some South Indian Villages it was noticed that cultivators in most of the villages resurveyed found that ammonium sulphate, though it immediately increased the yield, had the effect of cumulatively decreasing fertility and there-

fore necessitating an ever increasing application of the fertilizer. Farm-yard manure, on the other hand, has a progressive effect on the fertility of the soil, the improvement in yield which follows its application lasting for a few years undiminished. For maximum effect the manure should be thoroughly rotted and should contain a large admixture of organic matter. It must be applied sometime before sowing or transplantation, as humus will be formed only on decomposition. In the paddy fields, however, decomposition being quick, the application to the field should not be earlier than a month previous to transplantation.

The practice of using green manures on the paddy fields of the State has been on the increase for some years now . The green manures commonly used are sunnhemp, daincha, kolinji, vempati or wild indigo, indigo, pillipesara, kannga leaves and flowers, avarai, etc. These are as a rule leguminous crops which secure the nitrogen they require from the air, but depend for their growth on the phosphoric acid and potash in the soil. If they are ploughed in while green, they supply the organic matter needed for conserving the soil, enrich it in the matter of nitrogen and give back the phosphoric acid and potash they had taken from it in an easily assimilable condition. They can therefore be grown only on soils which contain the latter ingredients in sufficient quantities. To get a rich crop of green manures it may be necessary to manure the soil with phosphatic or potassic manures, but if that is done the soil will appreciably improve and will have at its disposal a great quantity of nitrogen for the next crop. Green manures on soils which are deficient in phosphoric acid or potash will not be complete manures, though they supply nitrogen and organic matter plentifully. This is realized by the cultivators who seek to remedy the deficiency by the administration of small quantities of wood ash. Since however most varieties of soil in the State have sufficient quantities of phosphoric acid and potash, except perhaps the laterite soil, and generally deficiency is seen in nitrogen, green manures applied alone produce good crops of paddy, sugarcane, tobacco, etc. In wet paddy fields as a rule green manures precede the long crop paddy which thus has a higher yield than the early or the late crop. To get good results an optimum dose of green manures should be used, say 5,000 lbs. per acre, but too much of mineral fertilizers used along with them render them inactive. Under swampy conditions green manures are better than farm-yard manures.

In manurial efficiency not all the green manures are of equal value. Daincha which grows to a height of 8 ft. can manure 4

acres of paddy, if grown on 1 acre, but sunnhemp has only half its efficiency and wild indigo or vempati leaves, only a quarter. But all green manures are comparatively inexpensive, especially when compared to oil cakes or artificial manures. W. H. Hamilton has estimated that green manuring works out to 1 anna per lb. of nitrogen supplied to the soil, as against 8 to 8½ annas per lb. in the case of oil cakes and 10 annas per lb. in the case of artificial fertilizers.[5]

The annual acreage under green manures in the State is about 1 million acres, with a total production of about 3 million tons. This must have experienced a slight increase under the Grow More Food Campaign. Distribution of green manure seed has been actively carried out in that campaign, but the response obviously has not been adequate to the effort expended. In some cases however the short supply of seed has been the limiting factor. With small holders the difficulty evidently is, as the Royal Commission on Agriculture have said, the disinclination to prefer to grow a green manure crop when a catch crop of short-term paddy or a money crop is easily possible. The necessity to get a sufficient living out of the small holding is so great that in the interests of the immediate present long run interests have to be sacrificed.

The present acreage under green manures forms only a tenth of the total acreage under paddy which is all too insufficient to have a striking effect on the yield. But the supply of seed and effective propaganda should eventually have their effects, for the cultivators all over the State realize fully the benefit derived by the soil from green manuring and would, if circumstances permit them, freely resort to it.

Oil cakes too are organic manures and are complete manures in the sense that they give the soil all the ingredients of food which plant growth requires. They contain a high proportion of combined nitrogen in forms which can be easily assimilated by the crops. But unlike farm-yard or green manure these manures are costly, and so will be used only in the cultivation of money crops, such as sugarcane, tobacco, cotton, oilseeds, etc. Their nitrogen content is very much higher than that of farm-yard manure or green manure, and the percentage of phosphoric acid and potash too is higher. In groundnut cake, which is the most important among them, the nitrogen content is 8%, phosphoric acid is 1·4% and potash 1·2%. Castor cake has a nitrogen content of 4·5%,

5. Principles of Paddy Manuring by W. H. Hamilton (Bulletin of the Department of Agriculture, Madras, 1911).

neem cake that of 5% and Pungum 3·6%. The chemical composition of these cakes are given in the table[6] below.

TABLE XLVIII

| Oil cake | Nitrogen per cent | Phosphoric acid per cent | Potash per cent |
|---|---|---|---|
| Groundnut .. | 8·0 | 1·4 | 1·2 |
| Castor .. | 4·5 | 1·9 | 0·7 |
| Neem .. | 5·0 | 1·3 | 1·7 |
| Pungum .. | 3·6 | 1·3 | 0·7 |

The benefit derived by the soil through oil cake manuring is well understood by Madras ryots, but the insignificant place occupied by them as manures in the State's agricultural economy has to be attributed to the uneconomic nature of their utilization under present conditions.

The supply of oil cakes too is not as profuse as desirable, for the total quantity of oil seeds grown in the State is not crushed here for oil. On an average 200,000 to 250,000 tons of seeds were exported from the State every year even during the war period, with the result that the cake which would have accrued as a by-product, if they had been crushed here, was altogether lost. The average production of oil seeds within the State during the five years 1940-45 was about 1,706,000 tons, of which nearly a seventh was exported. What part of the remainder is crushed for oil extraction is not known, but it may be taken that roughly 3/4 of the remainder is thus crushed. Cake production is officially estimated roughly at 267,000 tons per annum, a third of which is fed to cattle. Thus oil cakes annually available for use as manure will be probably about 200,000 tons, or one ton for every 160 acres of cultivated land.[7] At the rate of one ton for every five acres, which is the optimum quantity, cake production must increase thirty-fold, if this manure alone is to serve all the manurial needs of State agriculture. For the rice crop alone 2 million tons of oil cakes or ten times the available quantity will be required. But in conjunction with the maximum utilization of farm-yard manure and green manures, the available quantity of oil cakes will be

6. Taken from Rural Problems in Madras, p. 117.

7. S. Y. Krishnaswamy's figure is 260,000 tons—Rural Problems in Madras, p. 118.

found sufficient to meet present needs. It would be necessary however to prevent the exportation of any part of this supply to foreign countries or adjacent States for utilization there. During the war period, through the issue of prohibitory orders and the introduction of a system of licensing, an effective check on exportation and on distribution within the State was achieved, but if those restraints are removed the danger of a large part of the internal supply going out may arise.

Fish manure and composts of night soil are two other natural manures available within the State. Fish manure lacks potash, though nitrogen content is higher, and so it can be used only with wood ash or sulphate of potash. Its use is not widespread, partly due to the non-availability of supply in many localities and partly also due to the strong stench which accompanies its use and the sentimental objection on the part of many cultivators. On the West Coast, especially in the district of South Kanara, it is a popular manure in tobacco and vegetable cultivation, and remunerative crops of these are raised on sandy soils under well irrigation. Production too is confined to that area, but unfortunately even the full quantity produced, small as it is, does not find utilization within the State, a certain proportion of it being exported to foreign countries. Production at present is estimated at about 3000 tons. Internal consumption does not appear to exceed 800 tons.[8]

This manure however does not seem to have much scope for expansion either in production or in utilization. Its high cost, its irregular supply and its deficiencies as manure will militate against any widespread use of it. But steps should be taken to see that what is produced is conserved for use within at remunerative rates.

Composts of night soil and town refuse are still in the experimental stage both as regards production and as regards utilization. The popular prejudice against the use of night soil as manure will die hard in a country like India, where economic considerations are hardly allowed to override sentiment. Still the beginning that has been made can be expected in course of time to break down the prejudice and enable a fuller utilization of this cheap and efficient source of manuring. The State Department of Agriculture has been engaged for some years in popularizing their use and had by 1938-39 actually persuaded some municipalities in the State to

8. Rural Problems in Madras, p. 119.

inaugurate production. The total number of compost pits maintained in that year under the supervision of the Department was 5352, as against 3663 of the previous year. Both the Indore process and the Bangalore process have been adopted, but a definite predilection has been observed in favour of the Bangalore process. Thus under the Grow More Food Campaign the training given to the Sanitary Inspectors by the Agricultural Chemist and the Health Officer, specially deputed for the purpose, has been in the Bangalore process. The manufacture of poudrette has not been introduced into the State, though it was recommended by the Royal Commission on Agriculture, mainly due to the intricacy of the process involved. Poudrette is a more powerful manure than composts for irrigated crops of rapid and luxuriant growth and has been found to be specially efficacious in sugarcane, vegetable and fodder cultivation. It is too forcing for grain crops and fruit trees, and that is perhaps one of the reasons why composts are preferred to it in the State. According to Dr. Leather's analysis,[9] Poona poudrette contained 1% of nitrogen, whereas composts removed from pits after several months of decomposition usually contain only about 0·37% of nitrogen. Phosphoric acid and potash in composts are 0·16% and 0·15% respectively, while poudrette contains a higher percentage of phosphoric acid too. Compost making involves no intricate technique or equipment and can be undertaken even in rural areas by the farmers themselves. While its simplicity is an advantage, the length of time required for the compost to be quite ready as manure acts as a disadvantage. At present nearly 80 sanitary inspectors have been trained in the Bangalore process and they have initiated manufacture in the municipalities and panchayats to which they are attached. The compost manufactured is sold to ryots directly or through co-operative societies. Other municipalities have been ordered by Government to lease out their rubbish and night soil to co-operative societies. The compost manufactured and sold amounted to 692,391 tons.[10] The Government of Madras have recently inaugurated a four-year scheme for trying out the efficacy of compost manure at a cost of Rs. 54,300, and experiments are being conducted under it at some of the research stations. The places selected for experiments with night soil composts are Anakapalle, Samalkot, Iirukuppam, Guntur and Coimbatore. Experiments with farm waste compost are conducted at Maruteru, Palur, Pattambi and Aduthurai.

9. Quoted in Intensive Farming in India by Kenny.
10. Rural Problems in Madras, p. 123.

It is not possible with available data to make any estimate of potential production in the State, but on general grounds it may be said that this is bound to be a considerable and perenial source of supply, and in point of quantitative importance will be second only to farmyard manure. Its excellence from the point of view of quantity too is well recognized in those areas where it is now used. In the Kodikulam village of the Madura Taluk the investigator who conducted an investigation under the auspices of the Madras Banking Enquiry Committee in 1930, found that night soil was freely used in paddy cultivation, and out of the 1376 acres under paddy, nearly 605 acres had night soil as manure. The practice there seemed to be for night soil to be used on second class and third class land, while ordinary manure figured in first and second class land. All the lands manured with night soil are cultivated with a second crop, while only 2/5 of the extent of the land on which ordinary manure is used is sown with a second crop. The use of night soil as manure is definitely seen to increase the yield, though there is the suspicion that the quality of rice grown on that manure deteriorates in cooking. The average yield was seen to be 34 kalams per acre for both crops together when this manure was used, which is definitely greater than the 18 kalams per acre on the first and second class land on which ordinary manure was used.

This study of natural manures, available in the State, shows that at present they are insufficient to meet needs. The total manurial requirements of food and non-food crops of the State have been estimated by Mr. S. Y. Krishnaswami[11] at 887,000 tons of nitrogen, 372,000 tons of phosphoric acid and 894,000 tons of potash. These estimates are based on the annual depletion of these constituents from the soil by cropping. But manuring is required not only to retain existing fertility and sustain the present yield, but also to increase fertility and thereby increase the yield per acre. The requirements then will have to be placed at higher rates. But what those rates are have to be scientifically worked out. As against these requirements, the available quantities estimated by the same author,[12] including artificial fertilizers, are 282,000 tons of nitrogen, 171,000 tons of phosphoric acid and 253,000 tons of potash. The greatest deficiency is in nitrogen, and the problem is to make good this deficiency. It can be done only by an increased production of green manures, oil cakes, night soil composts and artificial manures.

11. Rural Problems in Madras, p. 115.
12. Rural Problems in Madras, p. 121.

Chemical fertilizers, such as sulphate of ammonia, superphosphate and other nitrogenous fertilizers, are also in use in the State in the cultivation of the more valuable crops. The Royal Commission on Agriculture, as early as 1928, found that increasing quantities of sulphate of ammonia, produced at the Tata Iron and Steel Works and at the coal fields of Bengal, Bihar and Orissa, were being internally used. Since then, not only has internal production expanded, but importation too has increased, and the intensive propaganda conducted by the British Sulphate of Ammonia Federation has had an appreciable effect. Annual average imports of all artificial fertilizers for the period 1935-40 were roughly 42,640 tons.[13] Their use however is confined to the richer crops, such as sugarcane, tobacco, garden produce, plantation crops, etc. The other cultivators either shy at the large expenditure involved or remain sceptical of the long-run efficiency of this fertilizer. Sulphate of ammonia is supposed to contain 20·5% of nitrogen, and so undoubtedly is the manure suited for Madras soils which are generally deficient in nitrogen, and for the staple crop of the State, rice, which requires more nitrogen than other crops. It is therefore unfortunate that cultivators should be growing in the belief that though this fertilizer gives higher immediate returns, the total effect is a permanent impoverishment of the soil. This is a matter which demands scientific investigation.

In the post-war plans of the Government of India priority has been given to the establishment of a factory at Sindri in Bihar, with a capacity of 350,000 tons a year for the manufacture of sulphate of ammonia. Similar factories in other localities too, with the requisite facilities, may be established as soon as plant and equipment are made available. But before embarking upon such magnificent ventures it would be well to discover whether the prospect of widespread utilization really exists in the country.

Under the Grow More Food Campaign Government have placed certain restrictions on the movement of oil cakes and bone meal, and to facilitate the transportation of surplus cake and bone meal from the surplus districts to the deficit districts, a zonal system on railway transportation has been inaugurated. Authority has been vested in the Director of Agriculture for fixing maximum prices for groundnut cake, and under this authority he has already fixed wholesale and retail prices in all the districts. To make manure available to the cultivators in adequate quantities and at low prices, the Department of Agriculture is engaged in a trading scheme, under

13. *Ibid*, p. 121.

which they purchase and stock oil cakes in most of the agricultural farms and sell them at prices which exclude overhead charges. This scheme of subsidized sale has been in existence for the last seven years. Another scheme deals with the supply of green manure seed, and to induce the ryots to take largely to green manure cultivation, certain concessions, such as remission of water rate charges on dry land and remission of land revenue on wet lands are offered. Ryots bordering on forest areas are permitted to remove silt from tank beds and ponds on the payment of a small fee per cartload, ranging between 2 annas and 4 annas per cartload, and to remove dead leaf and leaf mould at a seignorage of four annas per cart load. And to enable ryots to more liberally treat their lands with manure, the Government are freely giving taccavi loans to them through the Agricultural Department, and, subject to certain limits in each district, free supply of manure to deserving but poor ryots. The limit per individual cultivator is placed at Rs. 200, and for the district at Rs. 2,000. In all these different ways a determined effort is being made to make the ryots manure minded and expand manurial practices.

*Rotation of Crops*: The principle of rotation of crops, as an important aspect of crop cultivation, is well understood and adopted throughout the State. The traditional method, practised in the country for centuries now, included regular rotation of crops in the same fields in successive years and in different seasons if more than one crop was taken during the year. Mixed crops also, as a special species of rotation, has been long current in the State. Thus Voelkar, touring South India towards the close of the 19th century, noticed with appreciation the system of mixed cropping and rotation and referred to mixed cropping as a method peculiarly developed in India. Since his tour however, the diminution in the size of the holding, which has steadily been going on, has compelled the small holders among cultivators to confine to the food crop and cultivate it year after year for the sustenance of their families. But even to-day where the size of the holding would permit it, rotation is practised either in the form of one crop succeeding another or as two crops sown together, but harvested successively.

Thus, for instance, it was noticed in the Resurvey of Vadamalaipuram, Ramnad District, conducted in 1939-40, that on dry land cotton in one year is followed by the fodder crop, cholanathu, the next. On three crop land during the year, customary cultivation is cumbu from July to September, Keppai (one of the minor millets) from October to January and tobacco from February to May. On two crop land, ragi from October to January is followed by tobacco

from February to June or ragi from July to October, by cholam from January to April. In Gangaikondan (Tinnevelly District) too the same crop is rarely grown even on paddy lands during the kar or the pishanam seasons. On dry lands paddy is followed by dry cholam from October to February in the rotation. Paddy and betel too are grown in the rotation. Betel once planted will go on yielding for three years, but after that, paddy is sown on the same field for two years before a reversion is made to betel.

In the same manner in Eruvellipet (South Arcot District) ragi and groundnut are grown together as a mixed crop. After ragi has been transplanted into the open field and after weeding, groundnut is sown at intervals of 4 to 6 inches with the help of a hoe. Gingelly too is thus sown with mustard, ragi and cotton. Here the seeds are mixed together and sown broadcast. Gingelly is harvested first, then mustard and then ragi. Cotton picking also will begin as soon as gingelly is harvested. In Dusi (North Arcot District) a variation of mixed cropping was seen; groundnut sown with karamani and blackgram in furrows at intervals of about three yards, and roundabout the field, castor and cholam.

On sugarcane lands it used to be the practice, some twenty years ago, to grow sugarcane only once in four years, as it is a 12 month's crop and its cultivation prevents the growing of any other crop during the year. In the intervening period paddy or indigo used to be cultivated. Tobacco and Cambodia cotton in the rotation and gingelly and indigo were also seen in the village of Eruvellipet at the time of the original survey of the village by Dr. Gilbert Slater.

The system of rotation adopted in the different parts of the State has been empirically arrived at through the close study and observation of soil and climatic conditions. Naturally the crops grown differ in the different regions. Voelkar found that in dry land in Coimbatore cholam or gingelly grown from May to August was followed by cotton or gram in October. In garden land in the same district ragi sown in May was followed by tobacco in October and by cholam in April. Cereals alternated with sugarcane. It was in Tinnevelly that Voelkar found the wide prevalence of the mixed crop.

A good system of rotation eliminates the fallow year or season, and the enrichment of the soil, through the introduction of a leguminous crop in between two crops which take away nitrogen from the soil, is greater than when land is left in fallow. A system of rotation therefore confers a double advantage, maintenance of ferti-

lity of soil and the increased income accruing from the additional crop.

In paddy fields however alternation of crops is not the rule. Year after year the same crop is grown and on two crops and three crops land if irrigational water is available, two or three crops of paddy are taken. But paddy is exceptionally self-manuring, and the constant renewal of water gives the necessary soil constituents. Even here some kind of rotation may be introduced by the alternation of broadcasting with transplantation, as is done in some parts of Bengal.

## Chapter XVIII

# AGRICULTURAL PRODUCTION

The State contains a total land area of nearly 79·93 million acres of which 13·4 million are under forests, 31·66 million sown to crops, 11·47 million classed as cultivable waste and 9·32 million as current fallows. The area sown to crops forms only 39·6% of total area, and the area under forests, 16·8%. Cultivable waste and current fallows form 14·3% and 11·6% of total area respectively.[1] The detailed distribution of these categories of land among the districts is given in appendix VII. The land area is largest in the districts of Vizagapatam and Nellore, but the net area sown there forms only 29·7% and 25·5% of total area. Vizagapatam has 23·9% of land under forests which may to some extent account for the low percentage of cropped land, but Nellore has only 9·2% of land under that category. Other districts which have large land areas are Kurnool, Anantapur, Salem and Coimbatore. Each of these districts possesses above 4 million acres of land area and in all these, except Salem, the net area sown is above 40%. In Salem it is only 37·4%. Forest lands also abound in Kurnool and Coimbatore, being 33·8% and 31·8% respectively, but in the other two districts they form only 10·5% and 22·2% respectively. The largest percentage of cultivated area is in Bellary, 63·8%, and next to it in the order of importance will come Guntur and Nellore, bracketed, and Kistna, with 55·3%, 55·3% and 52·8% respectively. The lowest percentages of cultivated areas are in the Nilgiris, for obvious reasons, and in South Kanara, Chittoor, Nellore, Cuddapah, Vizagapatam and East Godavari. Among these districts the Nilgiris, Cuddapah, East Godavari and Vizagapatam possess large areas under forests, but that is not the case either with S. Kanara or Nellore.

In Nellore nearly 1 million acres of cultivable waste await cultivation and very nearly ¾ million acres of current fallows. A few other districts which have very nearly a million acres of cultivable waste are Anantapur and Malabar, with Cuddapah closely following with about 900,000 acres. Over half a million acres of this category of land are to be found in Vizagapatam, East Godavari, Kurnool, Chittoor, Salem, Madura, Ramnad and S. Kanara. Current fallows

1. These are average figures for the years, 1940-45. They were taken for study because the subsequent years were abnormal years.

abound in Vizagapatam, Anantapur, Nellore, Coimbatore, Trichinopoly and Tinnevelly. The only districts where there does not appear to be much scope for extension of cultivation are West Godavari, Kistna, Chingleput, South Arcot, North Arcot and Tanjore in the plains. Even in these districts some extension can however take place, but it may not involve larger areas than half a million acres in each of them. The extent of net area sown, forest land, cultivable waste, current fallows and the area irrigated for all the districts are given in appendix VII and appendix VIII.

The area sown more than once in the State forms 5·38 million acres or about 1/6 of the net area sown. Among the districts of the State, only Vizagapatam has over half a million acres of this type of land, while in Malabar, Coimbatore, North Arcot, Guntur and East Godavari about a third of a million are double cropped lands. As is to be expected the Ceded Districts and Chittoor, Ramnad and Trichinopoly have low acreages in this category, but it is a little surprising that West Godavari and Kistna too should reveal a similar state of affairs. Detailed figures for all the districts covering all the years of the period 1940-45 are given in appendix IX.

The area irrigated in the State is 11·73 million acres or 32·2% of the net area sown. The largest percentage of irrigated area as well as the largest absolute area irrigated is in Tanjore, and next in rank would come Chingleput, West Godavari, Kistna, East Godavari, North Arcot, Nellore, Madura, Ramnad, South Arcot and Vizagapatam. There is a total absence of irrigation in Malabar, South Kanara and the Nilgiris and insignificant percentages in Kurnool and Bellary. The percentages are rather low in Salem and Guntur too. Figures relating to area irrigated by districts are given in appendix VIII. In Nellore, Chingleput, South Arcot, Chittoor, North Arcot, Salem, Coimbatore, Trichinopoly, Ramnad, Madura and Tinnevelly, eleven districts in all, the average figures hide the irrigational improvement that has taken place during the last two years of the period, possibly as the result of the Grow More Food Campaign.

Of the gross area sown to crops 28·2 million acres are under food crops, exclusive of groundnut, and 8·7 million under non-food crops, forming 76·2% and 23·8% respectively. During the five year period 1940-45 no appreciable change in the acreage under food crops appears to have taken place. The average for the period is no higher than the figures relating to the years 1941-42 and 1942-43 and in the last year of the period 1944-45 the actual acreage

was below the average. The acreage in 1945-46, 1946-47 and 1947-48 were below the average for 1940-45. The tall claims made for the Grow More Food Campaign are not thus substantiated by those figures. Very slight improvement is seen in the districts of West Godavari, Kistna, Bellary, Anantapur and South Arcot, while positive declines have taken place in Vizagapatam, Chingleput and Kurnool.

The average acreage under cereals was 23·6 million acres in 1940-45 which was no higher than what it was in the beginning of the period. In 1945-46, 1946-47 and 1947-48 total acreage under cereals was lower than this. Only in one year, viz. 1943-44, is a slight improvement over this average figure noticed. The only districts where any increase is seen are Guntur, Kurnool and Bellary, possibly through the diversion of cotton lands to cereal cultivation, but in two of them, Guntur and Kurnool, subsequently acreages have fallen. In 1948-49 however it was higher by 200000 acres.

*Paddy* : Among the cereals paddy is the most important, being the staple food of the largest proportion of the population and covering a larger acreage than any other crop. During the period 1940-45 the average acreage under it was 10·7 million acres. In 1945-46 there was a decline to 10·2 million, but subsequently in the next year, it increased to 10·98 million acres. In 1947-48 there was a further decline and 1948-49 witnessed no improvement. Compared with the average for the quinquennium 1940-45, the acreage in 1946-47 was higher, but when compared with the acreage in 1944-45 which was 11 million acres, it is seen to be lower. The failure of rains during the years 1945-49, obviously accounted for the decline. Taking the whole period 1940-49 into consideration, no appreciable change in acreage is noticeable, the year to year fluctuations in the area sown being fully explained by seasonal changes.

Among the districts Tanjore takes the lead in paddy cultivation with nearly 1·3 million acres under it, and next in importance come Malabar with ·87 million acres, Vizagapatam with ·73 million acres and West Godavari with ·70 million acres. In the year 1948-49 the acreages were slightly higher in Tanjore, Vizagapatam and West Godavari (1·4 million, ·79 million and ·75 million respectively) but in Malabar there was a decline. In the Ceded Districts generally, as also in the districts of Coimbatore, Salem and the Nilgiris, paddy is not prominent. In Bellary the acreage under it is as low as 31,000 and in Kurnool 90,000. Districtwar distribution of the acreage is given in table XLIX.

TABLE XLIX

*Madras State*

Area and Yield — Paddy — Average for 1940-45 and for the years 1945-46, 1946-47, 1947-48, and 1948-49

| District | Area in thousand acres | | | | | Yield in thousand tons | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Average for 1940-45 | 1945-46 | 1946-47 | 1947-48 | 1948-49 | Average for 1940-45 | 1945-46 | 1946-47 | 1947-48 | 1948-49 |
| Vizagapatam .. | 721 | 724 | 791 | 791 | 784 | 371 | 374 | 429 | 440 | 420 |
| E. Godavari .. | 685 | 707 | 659 | 698 | 681 | 534 | 512 | 475 | 554 | 540 |
| W. Godavari .. | 704 | 754 | 756 | 773 | 745 | 563 | 491 | 624 | 626 | 602 |
| Kistna .. | 621 | 659 | 658 | 662 | 658 | 456 | 470 | 489 | 481 | 488 |
| Guntur .. | 441 | 452 | 433 | 464 | 405 | 324 | 337 | 280 | 325 | 326 |
| Kurnool .. | 76 | 76 | 89 | 97 | 90 | 48 | 42 | 52 | 61 | 51 |
| Bellary .. | 31 | 30 | 31 | 33 | 34 | 21 | 14 | 10 | 20 | 22 |
| Anantapur .. | 116 | 70 | 139 | 134 | 103 | 75 | 34 | 87 | 86 | 58 |
| Cuddapah .. | 133 | 104 | 140 | 121 | 105 | 95 | 57 | 89 | 75 | 52 |
| Nellore .. | 452 | 376 | 471 | 404 | 414 | 287 | 192 | 257 | 205 | 226 |
| Chingleput .. | 688 | 580 | 716 | 547 | 546 | 390 | 260 | 397 | 217 | 105 |
| S. Arcot .. | 602 | 589 | 602 | 572 | 586 | 435 | 344 | 427 | 312 | 261 |
| Chittoor .. | 243 | 177 | 241 | 191 | 186 | 180 | 110 | 160 | 92 | 94 |
| N. Arcot .. | 536 | 433 | 579 | 452 | 392 | 388 | 249 | 398 | 279 | 176 |
| Salem .. | 226 | 190 | 238 | 227 | 188 | 198 | 140 | 190 | 152 | 117 |
| Coimbatore .. | 123 | 134 | 140 | 142 | 145 | 93 | 84 | 100 | 101 | 97 |
| Trichinopoly .. | 366 | 330 | 357 | 347 | 446 | 277 | 208 | 244 | 216 | 254 |
| Tanjore .. | 1296 | 1350 | 1326 | 1320 | 1357 | 926 | 875 | 832 | 910 | 829 |
| Madura .. | 359 | 342 | 357 | 400 | 362 | 303 | 247 | 294 | 265 | 266 |
| Ramnad .. | 391 | 345 | 446 | 330 | 366 | 248 | 151 | 303 | 99 | 185 |
| Tinnevelly .. | 347 | 346 | 383 | 313 | 362 | 287 | 246 | 307 | 177 | 294 |
| Malabar .. | 875 | 825 | 828 | 806 | 808 | 496 | 490 | 492 | 413 | 479 |
| S. Kanara .. | 500 | 598 | 601 | 594 | 608 | 372 | 396 | 382 | 350 | 391 |
| The Nilgiris .. | 7 | 6 | 7 | 6 | 7 | 5 | 5 | 5 | 5 | 5 |
| The State .. | 10651 | 10203 | 10986 | 10434 | 10436 | 7375 | 6331 | 7342 | 6462 | 6395 |

The yield of paddy has varied during the quinquennium 1940-45 from a maximum of 7·7 million tons in the first year to a minimum of 6·9 million in the third year. In 1945-46 it was as low as 6·3 million, but in 1946-47 recovered to 7·3 million tons, but went down again to 6·4 million in 1947-48 and to 6·3 million in 1948-49. The aggregate yield was greatest in Tanjore district, 926,000 tons, almost double that of any other district except the two Godavaries and Malabar. In these three latter districts, the yields were 534,000, 563,000 and 496,000 tons respectively. In all these districts with the exception of West Godavari, the yields in all the later years were lower than the average for the quinquennium 1940-45 given above. In West Godavari, the yield in 1946-47 rose to 624,000 tons. In 1947-48 no appreciable improvement took place and in 1948-49 it declined again. Some other districts where the yield has increased during the quinquennium or subsequently are Vizagapatam, Kistna, Kurnool, Anantapur, Coimbatore, Ramnad, Malabar and South Kanara. In South Arcot and Chingleput it has remained almost stationary, while in all other districts it has gone down. In 1948-49 however in most of the districts the yields were lower than in 1947-48. Detailed figures are given in table XLIX.

The normal yield per acre of irrigated paddy for the State as a whole is 1790 lbs. This is lower than the yield per acre in 15 districts. In these districts the yield varies from 2000 lbs. in East and West Godavari and Tinnevelly to 1800 lbs. in Kistna, Guntur, Cuddapah and Ramnad. The Ceded Districts with the exception of Cuddapah have lower yields than the State average, and surprisingly enough that is the case with Vizagapatam, Nellore, Chingleput and Tanjore too. Vizagapatam has the lowest yield per acre, viz. 1400 lbs.

Even this lowest yield per acre is higher than the yields in the other States of India. In the Punjab, in Sind, in the United Provinces and in the North West Frontier Province where paddy under irrigation is cultivated on a large scale, the yields do not exceed 1052 lbs. per acre. In the Punjab and the North West Frontier Province they are below 1000 lbs. The average yield for the State compares favourably with the Egyptian yield under irrigation and is higher than the average yields in Burma, Indo-China, Siam, China and U.S.A., but lower than the yields in Japan, Italy or Spain. A comparative statement of the yields per acre in the Indian States and certain foreign countries is given in table L.

TABLE L

*Rice — Yield per acre* [2]

(In lbs. per acre)

| | | | | |
|---|---|---|---|---|
| Madras | .. 1790 | (Irrigated) | Burma | .. 1000 (845) |
| | 1308 | (Unirrigated) | Indo-China | .. 637 |
| Bombay | .. 967 | | Siam | .. 961 |
| Sind | .. 861 | (1052) | China | .. 1554 |
| Assam | .. 717 | | Japan | .. 2053 |
| Bihar and Orissa | .. 701 | | Egypt | .. 1799 |
| Bengal | .. 921 | | U.S.A. | .. 1413 |
| Central Provinces | .. 625 | | Spain | .. 3709 |
| | | | Italy | .. 2963 |
| Punjab | .. 819 | (Irrigated) | | |
| U.P. | .. 1050 | (Irrigated) | | |
| N.W.F.P. | .. 864 | (Irrigated) | India, average | .. 829 |

In unirrigated paddy the State average is 1308 lbs. But this figure is highly misleading as an index of the productivity of unirrigated culture in the districts, since it has been abnormally raised by the high per acre yields of Malabar, South Kanara and the Nilgiris. In the Nilgiris the yield is as high as 1800 lbs. in paddy grown under rainfall. Barring these three districts, all others have lower yields than the State average, the actual figures ranging from 1100 lbs. in seven districts (Guntur, Nellore, Chingleput, South Arcot, North Arcot, Tanjore and Ramnad) to 800 lbs. in four other districts (Vizagapatam, Anantapur, Salem and Coimbatore).

Comparing the yields in irrigated and unirrigated paddy in the several districts, the most striking phenomenon is the wide difference between them in almost all the districts. The difference is greatest in East Godavari, Salem, Coimbatore and Madura where it is more than double under irrigation, and least in Nellore, Chingleput, Tanjore, Guntur, Kurnool, Ramnad and Vizagapatam. In Nellore and Chingleput the difference is as low as 450 lbs., as against the highest difference of 1100 lbs. in East Godavari, Salem and Coimbatore. As a rule those districts which have the highest yield in unirrigated culture fail to show correspondingly high yields under irrigation. This is the case with Guntur, Nellore, Chingleput, South Arcot, North Arcot, Tanjore and Ramnad. Neither on the basis of source of irrigation nor in terms of fertility of land

2. Some of these figures are taken from Rural Problems in India by S. Y. Krishnaswamy, p. 172 and others from Agricultural Statistics of India, 1937-38. Madras figures are taken from the Season and Crop Report, 1944-45.

can an explanation be found. Four of these districts have canal irrigation and in the other two tanks abound, and though fertility cannot be expected to be uniform throughout the entire area under paddy in these districts, it is extremely unlikely that unirrigated land should be uniformly more fertile than irrigated lands. Possibly the right explanation will be found in the method of cultivation adopted or in the operation of the law of diminishing return.

The fairly high yield of the State in both unirrigated and irrigated culture is to a large extent due to the spread of improved varieties in actual cultivation. Many new high yielding and disease resistant varieties have been popularized by the Department of Agriculture, and it is roughly estimated that they have spread over an area of nearly 5 million acres.[3] The most popular varieties are G.E.B. 24, CO2, CO7 and ADT11. These occupy nearly three-fourths of the area under paddy in East Godavari, West Godavari, Kistna, Tanjore, Coimbatore, Salem, Madura, and North Arcot. The yield per acre has been increased from 10 to 25%.

*Jowar or Cholam*: The total area sown to cholam during the quinquennium 1940-45 was on the average 4,812,000 acres and the total yield 1·2 million tons. In 1945-46 there was heavy decline in the acreage under it to 4,150,000 acres, and though in the next year there was a recovery, the acreage did not get back to the old figure. In 1947-48 there was a further decline, but in 1948-49 again the acreage improved to 4·7 million. The yield also declined with the acreage, having been only 904,000 tons in 1945-46, 881,000 tons in 1946-47 and 946,000 tons in 1947-48. In 1948-49 however there was a large increase to 1,137,000 tons. The recovery in the acreage in 1946-47 is not registered in the yield. On the other hand, there was a further fall. Kurnool and Bellary among the districts have the largest acreage sown to the crop, closely followed by Coimbatore. Two other districts where this cultivation covers nearly 400,000 acres are Guntur and Nellore. In Nellore however there was a diminution in the post-war years. Tanjore, Malabar, S. Kanara, the Nilgiris and Chingleput have negligible acreages under it, and six other districts, viz. Vizagapatam, West Godavari, South Arcot, Chittoor, North Arcot and Ramnad have negligible yields. So, for nearly half of the State this cereal is of insignificant importance.

In many parts of the State cholam is grown both as a food crop and as a green fodder crop, and this accounts for the divergence

3. Rural Problems in Madras, p. 137.

between the acreage figures and yield figures. In the six districts listed above its predominence as a fodder crop is responsible for the low yield of grain.

TABLE LI

*Madras State*

Area and Yield of Principal Millets — 1947-48

(In thousands)

| | Cholam | | Cumbu | | Ragi | |
|---|---|---|---|---|---|---|
| | Area acres | Yield tons | Area acres | Yield tons | Area acres | Yield tons |
| Vizagapatam .. | 51 | 13 | 161 | 41 | 164 | 62 |
| E. Godavari .. | 70 | 20 | 46 | 11 | 16 | 6 |
| W. Godavari .. | 54 | 16 | 7 | 2 | 4 | 1 |
| Kistna .. | 201 | 58 | 14 | 3 | 4 | 1 |
| Guntur .. | 465 | 125 | 191 | 49 | 16 | 8 |
| Kurnool .. | 479 | 121 | 73 | 19 | 21 | 7 |
| Bellary .. | 662 | 118 | 163 | 30 | 24 | 4 |
| Anantapur .. | 248 | 41 | 177 | 25 | 91 | 44 |
| Cuddapah .. | 239 | 58 | 104 | 32 | 58 | 35 |
| Nellore .. | 321 | 76 | 110 | 46 | 85 | 49 |
| Chingleput .. | 4 | 1 | 8 | 1 | 77 | 25 |
| S. Arcot .. | 60 | 6 | 86 | 19 | 70 | 30 |
| Chittoor .. | 29 | 5 | 117 | 24 | 127 | 34 |
| N. Arcot .. | 61 | 15 | 61 | 16 | 95 | 47 |
| Salem .. | 225 | 37 | 211 | 50 | 276 | 83 |
| Coimbatore .. | 434 | 84 | 254 | 41 | 170 | 76 |
| Trichinopoly .. | 244 | 52 | 209 | 40 | 49 | 18 |
| Tanjore .. | — | — | 3 | 1 | 11 | 1 |
| Madura .. | 244 | 61 | 41 | 7 | 47 | 18 |
| Ramnad .. | 38 | 10 | 60 | 6 | 37 | 10 |
| Tinnevelly .. | 82 | 32 | 146 | 17 | 27 | 14 |
| Malabar .. | ·4 | ·1 | — | — | 4 | 1 |
| S. Kanara .. | — | — | — | — | 7 | 3 |
| The Nilgiris .. | — | — | — | — | 3 | 1 |
| The State .. | 4211 | 946 | 2239 | 481 | 1482 | 579 |

The average yield per acre for irrigated cholam for the State as a whole is 1467 lbs. Higher yields than this average exist in Bellary, Cuddapah, South Arcot, Chittoor, North Arcot, Salem, Coimbatore, Trichinopoly, Tanjore and Tinnevelly, mostly due to improved varieties which have spread to about quarter million

TABLE LII

*Madras State*

Area and Yield of Principal Millets — 1948-49

(In thousands)

| | Cholam | | Cumbu | | Ragi | |
|---|---|---|---|---|---|---|
| | Area acres | Yield tons | Area acres | Yield tons | Area acres | Yield tons |
| Vizagapatam .. | 60 | 16 | 181 | 45 | 185 | 67 |
| E. Godavari .. | 79 | 21 | 43 | 11 | 17 | 5 |
| W. Godavari .. | 58 | 14 | 9 | 2 | 6 | 2 |
| Kistna .. | 234 | 62 | 14 | 4 | 4 | 1 |
| Guntur .. | 461 | 117 | 191 | 46 | 17 | 8 |
| Kurnool .. | 620 | 149 | 69 | 18 | 22 | 13 |
| Bellary .. | 641 | 110 | 153 | 27 | 26 | 6 |
| Anantapur .. | 272 | 46 | 180 | 25 | 95 | 50 |
| Cuddapah .. | 300 | 61 | 101 | 25 | 65 | 35 |
| Nellore .. | 356 | 79 | 115 | 41 | 96 | 56 |
| Chingleput .. | 7 | 2 | 13 | 2 | 89 | 24 |
| S. Arcot .. | 100 | 17 | 96 | 17 | 89 | 36 |
| Chittoor .. | 34 | 8 | 138 | 24 | 141 | 46 |
| N. Arcot .. | 79 | 19 | 64 | 15 | 113 | 52 |
| Salem .. | 251 | 66 | 218 | 56 | 260 | 71 |
| Coimbatore .. | 504 | 137 | 257 | 44 | 150 | 64 |
| Trichinopoly .. | 294 | 70 | 218 | 47 | 61 | 20 |
| Tanjore .. | — | — | 3 | 1 | 12 | 4 |
| Madura .. | 305 | 96 | 42 | 9 | 50 | 24 |
| Ramnad .. | 43 | 17 | 96 | 15 | 69 | 30 |
| Tinnevelly .. | 78 | 37 | 158 | 20 | 30 | 18 |
| Malabar .. | 1 | ·2 | — | — | 4 | 2 |
| S. Kanara .. | — | — | — | — | 6 | 3 |
| The Nilgiris .. | — | — | — | — | 4 | 1 |
| The State .. | 4777 | 1137 | 2359 | 502 | 1609 | 647 |

acres. For dry cultivation the average yield for the State goes down as low as 577 lbs. per acre, but the most striking phenomenon is that in districts with low yields under irrigation higher yields than in other districts in unirrigated culture are seen. Detailed figures are given in Appendix XIII. The normal yield figures for Madras compare favourably with other Indian States. Under irrigation the Madras figure is lower than the Bombay figure only and higher than the yields in the Punjab, N. W. F. Province and Sind. In dry cultivation however Madras is lower than Bombay, United Provinces and Central Provinces. Comparative figures for all the important millets are given in Appendix XIII.

*Bajra or Cumbu*: The total acreage under cumbu is about 2·6 million acres. From this average figure in the five-year period

1940-45 it declined to about 2·3 million in the years 1945-49. Total yield too has gone down from 640,000 tons in the above mentioned quinquennium to about 500,000 tons in the three years following. The districts which have large acreages under it are Salem, Coimbatore, Trichinopoly, Bellary, Anantapur, Guntur and Vizagapatam. Districtwar distribution of the acreage and yield is given in tables LI and LII.

Normal yield per acre under irrigation is 1207 lbs. for the State, but in the districts of Bellary, Cuddapah, Nellore and Salem it is higher. Figures for all the districts are given in the Appendix XIII. Among the States of India, Madras has the highest yield per acre under irrigation, but is second to Bombay in dry cultivation.

*Ragi*: The average total acreage for the quinquennium 1940-45 under ragi was 1·8 million acres. In the next two years it declined to 1·5 million acres and in 1947-48 to 1·4 million acres. In 1948-49 it again increased to 1·6 million. Among the districts largest acreages were in Salem, Vizagapatam and Coimbatore. Total yield in the above mentioned quinquennium was 800,000 tons, but in the years following declined to about 600,000 tons. In 1948-49 there was a slight improvement to 650,000 tons. Districtwar distribution of area and yield is given in tables LI and LII. Normal yield per acre which is 1492 for the State is higher than in the case of cholam or cumbu. This undoubtedly points to the benefit which substitution of this crop for the other millets will have on the food position. Thirteen districts in all have higher yields per acre than the State average. Detailed figures are given in Appendix XIII.

*Minor Millets*: Other millets and cereals cover an acreage of about 3·8 million acres, but among these the more prominent ones are Korra, Varagu and Samai. They had acreages of 1·6 million, 0·8 million and 0·4 million acres respectively in 1948-49 and yields of 249,000, 263,000 and 65,000 tons respectively in the same year. Both the acreages and yields were higher during the war period. These millets as a rule are cultivated on less fertile land and consumed mostly by the producers themselves. Korra is largely cultivated in the Ceded Districts, Guntur, Nellore, Salem and Coimbatore, Varugu in Kurnool, Nellore and all the Tamil districts except Coimbatore and Tinnevelly, and Samai in Anantapur, Salem, Coimbatore and Madura. With the exception of insignificant acreages under ragi, millets do not figure at all in cultivation on the West Coast. The normal yields per acre of these crops are 389 lbs., 876 lbs. and 441 lbs. respectively.

*Pulses*: The total area under pulses in the quinquennium 1940-45 was on the average 2·9 million acres. In 1946-47 also the acreage was the same, but in 1945-46 and in 1947-48 it was lower by nearly 200,000 acres. In 1948-49 the old level was reached. Pulse cultivation comprises the cultivation of bengal gram, green gram, black gram, horsegram, redgram and other pulses. In each of these grams the acres in 1948-49 were 0·1 million, ·45 million, ·29 million, 1·4 million and ·36 million respectively. Pulse cultivation abounds in Vizagapatam, Coimbatore, Anantapur and Salem. The total yield of these crops in 1948-49 was 245,370 tons made up of 104,560 tons of horsegram, 45,610 tons of redgram, 39,610 tons of greengram, 36,000 tons of blackgram and 21,000 tons of bengal gram. Other pulses may have contributed about 2,000 tons, bringing the total yield of pulses to 247,000 tons. Districtwar figures for area and yield are given in Appendices IX to XII.

Normal yield per acre for the State as a whole for these crops are the following:—redgram, 257 lbs., blackgram, 255 lbs., greengram, 182 lbs., bengalgram 1377 lbs., and horsegram, 164 lbs. District variations are seen in these yields, but they seem to depend more on fertility of soil and manuring than on the varieties used. Research in the direction of discovering improved varieties was only recently started and is still in the early stages of experimentation and multiplication.

*Sugarcane and other Sugar Crops*: The average area under sugarcane during the period 1940-45 was 141,000 acres but in the three subsequent years it increased to 161,000, 203,000 and 272,000 acres respectively. In 1948-49 it again declined to 176,000 acres. The total area under sugar crops including sugarcane was in 1948-49 only 251,000 acres. Sugarcane cultivation is prominent in Vizagapatam, South Arcot, North Arcot and Chittoor. Vizagapatam has quite a large area under other sugar crops too, as also Tinnevelly. Sugarcane is mostly grown under irrigation and its cultivation is undertaken only by well-to-do agriculturists. The acreage at the beginning of the inter-war period was just about 100,000 acres, and it continued to be so till the end of the period. The increase recorded now has therefore been during the war and post-war periods.

The yield of jaggery from sugarcane was in 1947-48 about 754,000 tons which is higher than the average production during the war period by 350,000 tons. In 1948-49 it went down to the phenomenally low figure of 533,000 tons. The increase

in acreage was mainly responsible for this increase in yield, for the yield per acre has remained more or less steady and if anything, has slightly deteriorated. The normal yield is estimated at about 6,916 lbs. of raw sugar or gur per acre for the State as a whole, about the highest in India, but this figure nevertheless compares unfavourably with 4 ton yield per acre of Java or the 4½ tons of Hawaii. In certain districts however the normal yield is higher, rising to as much as 8,500, 8,800 and even 9,320 lbs. per acre. Improved varieties supplied by the Sugar Breeding Station at Coimbatore appear to have covered almost the whole acreage under it. With a little more effort at a general improvement of yield the State can attain self-sufficiency in the matter of sugar.

*Fruits and Vegetables*: Fruits and vegetables cover an aggregate area of nearly 798,000 acres at present. This registers an increase of nearly 60,000 acres over the war-time average acreage, and has evidently been due to the intensive campaign conducted to grow more vegetables. The largest area under them is in the district of Malabar, over a fourth of the acreage of the State. Other districts have much lower areas, only a few of them having even a quarter of the Malabar acreage. The Ceded Districts, barring Cuddapah, have the lowest areas. Figures for production are not available except for potatoes which had a total production in 1946-47 of 52,580 tons and in 1948-49 of 50,770 tons. The new acreage of nearly 27,800 acres brought under fruits and vegetables under the Grow More Food Campaign is estimated to have an annual production of 72,400 tons per annum. This rate of yield cannot be directly made the basis of the calculation of the total yield of fruits and vegetables for the reason that the new acreage is mostly under potatoes and English vegetables and have methods of high culture practised on them. But making allowance for lax and inefficient cultivation in the rest of the area, total production may roughly be estimated at 1½ to 2 million tons.

*Oil Seeds*: Of the 8·7 million acres under non-food crops during the war period, 5·3 million were under oilseeds, 2·4 million under fibres, ·6 million under drugs and narcotics and ·4 million under fodder crops. In 1946-47 and in 1947-48 however the acreages under oilseeds and fodder crops increased and that under fibres fell. In 1948-49 there was a fall in all the three. The oilseeds include groundnut which covers the large acreage of 3·7 million acres and gingelly, castor seed and cocoanut These three latter have ·6 million, ·23 million and ·6 million acres

respectively. In none of these crops was any decline noticeable during the war period, except in groundnut which registered a steep decline in 1941-42 but subsequently steadily recovered, till in the last year of the period the acreage under it was appreciably greater than in the first year. In the post-war period it has still further increased at the expense of the other oilseeds. This improvement was perhaps due to the importance attached to groundnut as a food crop and the propaganda conducted on this behalf in the Grow More Food Campaign. Groundnut is grown in all the districts except South Kanara and the Nilgiris, but South Arcot, North Arcot, Kurnool, Bellary, Anantapur, Vizagapatam and Guntur have taken to it easily. Wide fluctuations are however seen in the acreage under it from year to year.

There is a concentration of the area under the cocoanut in Malabar, South Kanara, East Godavari and Tanjore. In the other districts the acreages are insignificant. Malabar has by far the largest area, nearly 376,000 acres, while East Godavari, South Kanara and Tanjore have only 56,000, 54,000 and 37,000 acres respectively. This is a crop in which year to year fluctuations are not seen.

Gingelly cultivation is most prominent in the northern districts of Vizagapatam, East Godavari and West Godavari, in the central districts of Salem, Coimbatore and Trichinopoly and the east coastal districts of South Arcot and Tinnevelly. In the other districts with the exception of Anantapur, Ramnad and Madura, its cultivation is insignificant.

The acreage under castor seed is low in the State as a whole and does not stand comparison with the acreage under the other oilseeds. Its cultivation is concentrated in a few districts, such as the Ceded Districts except Cuddapah, Guntur and Nellore and Salem. No apppreciable changes have taken place in the war period in the acreage under it.

The total production of groundnut in 1946-47 and 1947-48 was 1·6 million tons which is about the same as the average production during the quinquennium 1940-45, but a little less than the yield of 1·9 million tons in 1939-40. In 1948-49 it was only 1·5 million tons. From 1·9 million in the first year of the war period it went down to 1·1 million in the second year, probably due to loss of markets and low prices, and thereafter gradually increased to 1·9 million in the last year. Since then there has been a further fall. The Ceded Districts, South Arcot, North Arcot, Vizagapatam, Guntur, Chittoor, Salem, Coimbatore,

Trichinopoly and Madura have contributed more largely than other districts towards this production. In South Kanara and on the Nilgiris no groundnut is grown, while in the other districts, not included in the above list, yields have been insignificant. In all districts the war period saw appreciable diminution in yield. The normal yield is about 1,012 lbs. per acre.

In gingelly and castor seed the yields in 1946-47 were 80,000 and 19,000 tons respectively. In 1947-48 they were 72,000 and 20,000 tons and in 1948-49, 71,000 and 21,000 tons. During the war period production was slightly higher, but year to year fluctuations owing to seasonal conditions existed, and the lower yields in 1946-47, 1947-48 and 1948-49 also may be explained in the same way. All the districts except the Nilgiris in the case of gingelly, and Chingleput, South Kanara and the Nilgiris in the case of castor seed have contributed their quota. Still the northern districts of Vizagapatam, East and West Godavari and South Arcot, Salem, Coimbatore and Trichinopoly in the south have contributed more largely to the State total of gingelly. The normal yieldsper acre are 303 lbs. in gingelly and 225 lbs. in castor.

Detailed figures of the area and yield for the oilseeds by districts are given in Appendix IX to Appendix XII.

*Fibres—Cotton*: The average area occupied by fibres in the quinquennium 1940-45 was 2·4 million acres of which 2·2 million were under cotton. The acreage under cotton has been steadily diminishing from 1942-43 onwards and by 1944-45 the reduction amounted to 800,000 acres. By 1947-48 there was a further reduction by 400,000 acres but this was entirely made up in 1948-49. The Ceded Districts, Coimbatore, Madura, Ramnad, and Tinnevelly and with slightly smaller acreages, Guntur, Salem and Trichinopoly are the districts where cotton cultivation assumes any prominence. In all these districts the war period witnessed noticeable declines, with however sharper declines in Coimbatore, Kurnool and Bellary. The prohibition of the cultivation of certain varieties of short staple cotton under the Grow More Food Campaign, the offer of a bonus for the diversion of land from cotton to food crops and the severe decline in cotton prices were undoubtedly responsible for these declines.

Many varieties of cotton are grown, each area more or less specializing in a particular variety. The principal varieties are Cambodias, Tinnevellies including Karunganni, Northerns, Westerns and Cocanadas. A little more than a fifth of the total area is under Cambodias, a little more than a fourth under Tinnevellies and

about a third under Westerns. New varieties evolved by the Agricultural Department have been popularized in actual cultivation with longer staple and heavier yields.

Total production which was 560,000 bales of 400 lbs. each in 1941-42 has steadily declined since then and was only 381,000 bales in 1944-45, 336,000 bales in 1946-47 and 296,000 bales in 1947-48. In 1948-49 it was 342,000 bales. A great part of the reduction has been in the short staple varieties such as the Mungari, Buradapathi and Cocanada.

Cotton is grown both as an irrigated and as an unirrigated crop, but irrigated culture prevails only in the Tamil districts. Very much higher yields are secured under irrigation than in dry cultivation, the difference being as much as 200 lbs. per acre. The normal yield per acre for the State as a whole is about 286 lbs. under irrigation, while it is only 78 lbs. when rainfed. This yield under irrigation is higher than in any other State of India except Bombay where it is 100 lbs. more. In fact the highest yields in Madras do not approach the Bombay average. The yield under unirrigated culture is however about the lowest in India, with North-Western Frontier Province only recording a lower figure. In the Ceded Districts and in Chingleput, South Arcot, North Arcot and Chittoor it is as low as 50 lbs. per acre.

Extension of irrigation into the cotton acreage and the substitution of high yielding and longer stapled varieties for the inferior varieties at present cultivated are thus the two ways in which the yield can be improved. The Agricultural Department of the State since its inception has been attempting to do it. The policy followed by the Department has however been to maintain a balance between the cultivation of short stapled and long stapled varieties in order to meet different kinds of demand. To some extent this policy has succeeded, as is evidenced by the greater spread of the longer stapled strains in cultivation.

*Drugs and Narcotics*: The area under drugs and narcotics forms only ·6 million acres with almost half of it under tobacco. With the exception of Coimbatore in the south, tobacco cultivation may be said to be concentrated in the Northern Circars. Guntur has by far the largest acreage under it, forming very nearly half of the total under it in the State. Year to year fluctuations are seen, and the years 1942-43 and 1943-44 recorded low acreages, but the position lost was more than made up in 1944-45. There is no cultivation of tobacco in Chingleput, Malabar and the Nilgiris, and only negligible areas in Bellary, Chittoor and Tinnevelly. The

average total yield for the quinquennium 1940-45 was 119,000 tons, but in 1946-47 and in 1947-48 it was only 108,000 tons, and in 1948-49, only 114,000 tons. More than half of this was concentrated in Guntur. Average yield per acre in the State is 992 lbs., but very much higher yields obtain in Cuddapah, Nellore, Coimbatore and North Arcot. Curiously enough the yield in Guntur is lower than the State average.

No estimate is available regarding the yield of other drugs and narcotics.

*Fodder Crops*: The acreage under fodder crops is now less than half a million, though the two post-war years witnessed an increase by about 100,000 acres. In 1947-48 however the acreage went down a great deal. The war period saw no appreciable improvement, which was in striking contrast to the All-India tendency in the pre-war period and the early years of the war period for a definite increase at the expense of the food crops. Under the Grow More Food Campaign this tendency was reversed for sometime, but in the early post-war period, in this State an appreciable increase took place. The increase in acreage was however in a few districts such as Ramnad and Tinnevelly in the south, and Guntur, Kistna, Nellore and the two Godavaries in the north. A quarter of this increase was concentrated in Guntur.

Under the Grow More Food Campaign an increase in the acreage of fodder crops too is an important item of propaganda. The ryots are supplied with seed of fodder crops and grasses like napier and guinea grass, lucerne, berseem, pillipesara, etc. During 1945-46 nearly 516 tons of seed were thus distributed. In addition to these crops and grasses, cholam is also grown as a green fodder crop, the exact acreage of which is indistinguishable from the acreage under the same crop as food.

## Chapter XIX

# AGRICULTURAL PRODUCTION — *(Contd.)*

### Milk and Milk Products

The annual production of milk in the State has been estimated at 58·6 million maunds of which 27·4 million maunds are contributed by cows, 27·9 million maunds by buffaloes and ·15 million maunds by goats.[1] This is supposed to represent 9% of the total milk production of undivided India. The estimate is obviously based on the average lactation yields of cows and buffaloes and the number of them in milk. According to the Census of 1944, there were 5·8 million cows, 3·0 million she-buffaloes and 3·6 million she-goats in the State. Of these totals only 1·86 million cows and 1·56 million she-buffaloes were actually in milk, representing 31% and 50% of the total respectively. The rest were either dry or had not calved. Detailed figures for all the districts of the State are given in table LIII.

The largest number of cows are in the districts of South Arcot, Salem, Coimbatore, Tanjore and Malabar, in each one of which the number exceeds, 300,000, and next in importance come Chittoor, Vizagapatam, and North Arcot with numbers between 250,000 and 300,000. Among the districts, excluding Madras and the Nilgiris for obvious reasons, three of the Ceded Districts, viz., Cuddapah, Kurnool and Bellary have less than 100,000 and Guntur and Kistna in the Circars, Ramnad and Tinnevelly in the South and Anantapur among the Ceded Districts have between 100,000 and 150,000. In seven districts, viz., South Arcot, Coimbatore, Salem, Vizagapatam, Malabar, East Godavari and Tanjore, cows in milk number above 100,000.

The largest number of she-buffaloes exist in Guntur, Kistna and Nellore, all above the 250,000 mark, and the smallest numbers are seen in Malabar, South Kanara, Ramnad, North Arcot and South Arcot. Correspondingly buffaloes in milk too abound in the three districts above mentioned and are the fewest in the five latter districts.

Taking both cows and buffaloes together Guntur has the largest number in milk, 276,753, and five other districts too, viz., Vizaga-

1. Rural Problems in Madras by S. Y. Krishnaswami, p. 216.

patam, East Godavari, Kistna, Nellore and South Arcot have numbers exceeding 200,000. The Ceded Districts, Chingleput, Ramnad, Madura, Tinnevelly and South Kanara have the lowest figures.

But the number of milk animals unrelated to yielding capacity or the population to be served will hardly give an idea of the aggregate production in each district or the adequacy of that production. In sheer numbers the milch animals are numerous in this country, more numerous than in certain others where milk production per head is many times the Indian production. According to the figures given by Mr. S. Y. Krishnaswami (p. 208) there are 16 milch cattle (cows and buffaloes) in India for every 100 of the population or one animal for every six persons, whereas in Britain there is a cow only for 14 persons. In spite of this, daily production of milk per head in Britain, as pointed out by Dr. N. C. Wright (p. 154) is about double the Indian production. Estimating the population of the State at about 50 million in 1944 there was one milch animal for every 6·3 persons in Madras in that year, which is about the same ratio as the all-India one. But the average lactation yield of a cow as computed by Mr. S. Y. Krishnaswami is only 532 lbs. here, as against an all-India figure of 753 lbs. (p. 209). This means that production per head is much lower in this State than in India as a whole. Doubtless Indian animals are poor milkers and among them Madras animals, barring a few good breeds, come at the very bottom. Table LIV shows the comparative yieldsof milch cattle in the important countries of the world and daily production per head of the population.

From the district-war distribution of cows and she-buffaloes in milk given in table LIV it may be possible to work out on an average basis the milk production in the different districts, but the results will be such rough approximations that they may vary widely from the reality. Especially will this be so in the case of those districts where animals of good breeds abound. Among milk animals the only good breed is the Ongole breed in Madras, and this breed appears to be numerous in the Circars, and so the production figures worked out for those districts may vary widely from the reality. Still if one is to get any idea of the milk production by districts, this method of computation is the only method available. In table LV figures relating to the total production of cow's and buffalo's milk and production per head of the population thus computed are given.

Among the districts (excluding Madras District) total production is highest in Guntur and lowest in Ramnad, but when produc-

TABLE

*Madras*

Cows, She-Buffaloes and

| District | Cows: Cows in milk | Cows: Dry | Cows: Not calved | Cows: Total | Cows: Female young stock 3 years and under |
|---|---|---|---|---|---|
| Vizagapatam .. | 125383 | 108328 | 45455 | 279166 | 117360 |
| E. Godavari .. | 110905 | 103947 | 28766 | 243618 | 106832 |
| W. Godavari .. | 60407 | 80960 | 24062 | 165429 | 68836 |
| Kistna .. | 48922 | 62077 | 26565 | 137564 | 52193 |
| Guntur .. | 47458 | 52728 | 18028 | 118214 | 49570 |
| Kurnool .. | 31618 | 45378 | 14490 | 91486 | 31507 |
| Bellary .. | 39576 | 40693 | 14246 | 94515 | 37999 |
| Anantapur .. | 52504 | 67995 | 23891 | 144390 | 55035 |
| Cuddapah .. | 29445 | 35832 | 13363 | 78640 | 29827 |
| Nellore .. | 72657 | 116530 | 48167 | 237354 | 72056 |
| Chingleput .. | 66741 | 105019 | 40402 | 212162 | 71154 |
| S. Arcot .. | 183781 | 138484 | 92578 | 414843 | 95328 |
| Chittoor .. | 89348 | 151255 | 49232 | 289835 | 95104 |
| N. Arcot .. | 93135 | 101613 | 61559 | 256307 | 77397 |
| Salem .. | 126490 | 156792 | 79334 | 362616 | 139114 |
| Coimbatore .. | 131906 | 124780 | 72503 | 329189 | 133136 |
| Trichinopoly .. | 70773 | 97731 | 62323 | 230827 | 86185 |
| Tanjore .. | 101829 | 142417 | 78768 | 323014 | 108230 |
| Madura .. | 70165 | 68843 | 55262 | 194270 | 72446 |
| Ramnad .. | 51957 | 43079 | 36939 | 131975 | 50129 |
| Tinnevelly .. | 61744 | 48242 | 31604 | 141590 | 50032 |
| Malabar .. | 115841 | 160552 | 51315 | 327708 | 141234 |
| S. Kanara .. | 70998 | 96237 | 38260 | 205495 | 81190 |
| The Nilgiris .. | 7927 | 5730 | 2332 | 15989 | 5824 |
| Madras .. | 2548 | 620 | 149 | 3317 | 878 |
| Total .. | 1864058 | 2155862 | 1009593 | 5029513 | 1829496 |

LIII

*State*

*She-Goats — Census of 1944*

| She-Buffaloes | | | | | | |
|---|---|---|---|---|---|---|
| Buffaloes in milk | Dry | Not calved | Total | Female young stock 3 years and under | Cows and buffaloes in milk | She-Goats over 1 year |
| 89905 | 55179 | 32710 | 177794 | 64114 | 215288 | 173945 |
| 92404 | 39294 | 11949 | 143647 | 66349 | 203309 | 73798 |
| 95044 | 44099 | 16196 | 155339 | 67510 | 155451 | 60806 |
| 152682 | 74332 | 34170 | 261184 | 119439 | 201604 | 101778 |
| 229295 | 88414 | 36791 | 354500 | 191999 | 276753 | 102139 |
| 86172 | 64842 | 18116 | 169130 | 66122 | 117790 | 128808 |
| 41092 | 29528 | 10354 | 80974 | 31929 | 80668 | 100420 |
| 43894 | 33647 | 10456 | 87997 | 38261 | 96398 | 150466 |
| 76143 | 55965 | 15203 | 147311 | 54025 | 105588 | 105444 |
| 140270 | 79215 | 36365 | 255850 | 115758 | 212927 | 173035 |
| 41290 | 32357 | 14578 | 88225 | 28303 | 108031 | 110826 |
| 29808 | 20812 | 14783 | 65403 | 20553 | 211589 | 202761 |
| 39894 | 36867 | 14490 | 91251 | 29722 | 129242 | 229539 |
| 34068 | 19000 | 12623 | 65691 | 22480 | 127203 | 133623 |
| 49948 | 26701 | 17043 | 93692 | 39486 | 176438 | 370441 |
| 56854 | 31424 | 20444 | 108722 | 50522 | 188760 | 208265 |
| 51392 | 38768 | 23743 | 113903 | 39415 | 122165 | 313826 |
| 56037 | 46068 | 26294 | 128399 | 38709 | 157866 | 225169 |
| 40201 | 21731 | 15469 | 77401 | 27405 | 110366 | 182147 |
| 26269 | 16246 | 10237 | 52752 | 20626 | 78226 | 153690 |
| 45507 | 29303 | 16383 | 91193 | 29816 | 107251 | 177492 |
| 19957 | 17650 | 6683 | 44290 | 14505 | 135798 | 144620 |
| 22577 | 21007 | 6739 | 50323 | 13974 | 93575 | 12705 |
| 5409 | 3032 | 1789 | 10230 | 3068 | 13336 | 3024 |
| 3546 | 639 | 228 | 4413 | 583 | 6094 | 276 |
| 1569658 | 926120 | 423836 | 2919614 | 1194673 | 3433716 | 3639043 |

TABLE LIV

Milk Yields of Cows in Important Countries of the World[2]

| Country | Approximate milk yield of a cow in one lactation | Country | Approximate milk yield of a cow in one lactation |
|---|---|---|---|
| | lbs. | | lbs. |
| Netherlands | .. 7559 | U.S.A. | .. 4126 |
| Denmark | .. 7005 | Australia | .. 3463 |
| Switzerland | .. 6498 | Canada | .. 3195 |
| England and Wales | .. 5576 | India | .. 753 |
| Japan | .. 5857 | Madras | .. 532 |
| Germany | .. 5305 | | |
| New Zealand | .. 5118 | | |

Estimated Production and Consumption per head of population in 20 countries[3]

| Country | Daily production per head | Daily consumption per head | Country | Daily production per head | Daily consumption per head |
|---|---|---|---|---|---|
| | oz. | oz. | | oz. | oz. |
| New Zealand | .. 244 | 56 | Czechoslovakia | .. 36 | 36 |
| Denmark | .. 148 | 40 | Belgium | .. 35 | 35 |
| Finland | .. 74 | 63 | Austria | .. 35 | 30 |
| Sweden | .. 69 | 61 | Germany | .. 34 | 35 |
| Australia | .. 69 | 45 | France | .. 33 | 30 |
| Canada | .. 66 | 35 | Poland | .. 27 | 22 |
| Switzerland | .. 65 | 49 | Great Britain | .. 14 | 39 |
| Netherlands | .. 54 | 35 | India | .. 8 | 7 |
| Norway | .. 45 | 43 | Italy | .. 11 | 10 |
| U.S.A. | .. 37 | 35 | Rumania | .. 9 | 9 |

2. Taken from Rural Problems in Madras by S. Y. Krishnaswami, p .209.
3. Taken from Report on the Development of the Cattle and Dairy Industries of India by N. C. Wright, p. 154.

TABLE LV

*Madras State*

Milk Production

| District | Estimated population 1944 | Cows in milk | Buffaloes in milk | Production of cow's milk | Production of buffalo's milk | Total of milk cow's and buffalo's | Daily production per head of population |
|---|---|---|---|---|---|---|---|
| | | | | thousand maunds | thousand maunds | thousand maunds | oz. |
| Vizagapatam .. | 3961322 | 125383 | 89905 | 1840 | 1590 | 3430 | 3·1 |
| E. Godavari .. | 2246176 | 110905 | 92404 | 1630 | 1640 | 3270 | 5·6 |
| W. Godavari .. | 1429771 | 60407 | 95044 | 880 | 1680 | 2560 | 6·4 |
| Kistna .. | 1479287 | 48922 | 152682 | 710 | 2710 | 3420 | 8·3 |
| Guntur .. | 2359665 | 47458 | 229295 | 640 | 4090 | 4730 | 7·2 |
| Kurnool .. | 1187515 | 31618 | 86172 | 460 | 1530 | 1990 | 6·0 |
| Bellary .. | 1076465 | 39576 | 41092 | 580 | 730 | 1310 | 4·4 |
| Anantapur .. | 1213590 | 52504 | 43894 | 770 | 770 | 1540 | 4·5 |
| Cuddapah .. | 1091372 | 29445 | 76143 | 430 | 1350 | 1780 | 5·5 |
| Nellore .. | 1660688 | 72657 | 140270 | 1060 | 2490 | 3550 | 7·7 |
| Chingleput .. | 1878675 | 66741 | 41290 | 980 | 730 | 1710 | 3·2 |
| S. Arcot .. | 2655711 | 183781 | 27808 | 2700 | 490 | 3190 | 4·3 |
| Chittoor .. | 1696058 | 89348 | 39894 | 1310 | 710 | 2020 | 4·3 |
| N. Arcot .. | 2685797 | 93135 | 34068 | 1360 | 600 | 1960 | 2·6 |
| Salem .. | 3024164 | 126490 | 49948 | 1850 | 880 | 2730 | 3·2 |
| Coimbatore .. | 2956082 | 131906 | 56854 | 1930 | 1010 | 2940 | 3·6 |
| Trichinopoly .. | 2279661 | 70773 | 51392 | 1040 | 910 | 1950 | 3·0 |
| Tanjore .. | 2617206 | 101829 | 56037 | 1490 | 990 | 2480 | 3·4 |
| Madura .. | 2542018 | 70165 | 40201 | 1030 | 210 | 1240 | 1·7 |
| Ramnad .. | 2027154 | 51957 | 26269 | 760 | 460 | 1220 | 2·2 |
| Tinnevelly .. | 2311879 | 61744 | 45507 | 900 | 800 | 1700 | 2·6 |
| Malabar .. | 4059096 | 115841 | 19957 | 1700 | 350 | 2050 | 1·8 |
| S. Kanara .. | 1573792 | 70998 | 22577 | 1040 | 330 | 1370 | 3·2 |
| The Nilgiris .. | 224808 | 7927 | 5409 | 110 | 90 | 200 | 2·2 |
| Madras .. | 824130 | 2548 | 3546 | 30 | 60 | 90 | 0·4 |
| Total . | 51634824 | 1864058 | 1569658 | 27400 | 27900 | 55300 | 3·8 |

tion per head is taken into account, Kistna has the highest figure and Madura the lowest. Since the latter figures are more significant and indicate, though roughly, the adequacy or otherwise of the production they should really form the basis of analysis. It is seen from such an analysis that 14 districts have a production less than the State average and that all of them with the exception of Vizagapatam are in the Tamil area and on the West Coast. Production is as low as 1·7 oz. and 1·8 oz. in Madura and Malabar respectively, while it is as high as 8·3 oz., 7·7 oz. and 7·2 oz. in Kistna, Nellore and Guntur respectively. And when it is remembered that no account has been taken of the higher yields of Ongole cattle which are more numerous in the Circars and the Ceded Districts and as a consequence the figures pertaining to those districts are really reduced and those for other districts inflated, it will be realized that the difference in production as between these two areas, wide as it is, is in reality greater still. Except in the case of Kistna, no district produces a quantity sufficient to ensure the consumption per head of 8 oz. a day adopted by the Post-War Reconstruction Committee of Council as the minimum nutritional requirement. Guntur and Nellore come very near it on the basis of these figures and in reality may equal or exceed it, as also West Godavari and Kurnool. As regards the other districts they fall far short of the mark. If the quantity of goat's milk also is included, the situation will improve slightly, but not appreciably, for the available quantity is only ·01 oz. per head for the State as a whole. Goats are however more numerous in the Tamil districts and in Malabar than in the northern districts.

This sorry state of affairs is doubtless due to the low yield of Madras cows. In spite of the fact that there is a milch animal for every six persons in Madras, milk production is so slow that among the States of a country which itself stands last in the list of countries in this matter, this State is near the bottom.[4]

Of the quantity of milk produced in the State, only 32% is consumed as liquid milk, the rest being converted into ghee, curds, etc. Of cow's milk alone nearly 50% is thus consumed, the demand for it being heavy from infants, expectant mothers and invalids. The greater proportion of buffalo milk is converted into ghee. The table on page 321 gives the approximate quantities, with percentages, utilized in different forms.

A comparison of this table with the all-India table given by N. C. Wright[4a] shows that the percentage distribution as be-

4. N. C. Wright, Report, p. 155.
4a. Report, p. 158.

TABLE LVI

Utilization of Milk in the Madras State[5]

(in lakhs of maunds)

| | Annual quantity | Percentage to total production | Percentage to total quantity converted into products |
|---|---|---|---|
| Consumed in liquid form .. | 165·00 | 32·00 | — |
| Converted into ghee .. | 267·00 | 52·00 | 76·47 |
| „ „ curd .. | 77·00 | 15·00 | 22·06 |
| „ „ butter .. | 3·00 | 0·60 | 0·88 |
| „ „ khoa .. | 1·00 | 0·20 | 0·29 |
| „ „ ice cream .. | 0·75 | 0·15 | 0·22 |
| „ „ cream .. | 0·25 | 0·05 | 0·08 |
| Total .. | 514·00 | 100·00 | 100·00 |

tween fluid milk and milk products is about the same in this State as it was in undivided India, nearly 2/3 of production being converted into milk products in both cases. This procedure may appear a little surprising when it is realized that milk products ordinarily fetch lower prices than when the same quantity is sold in a liquid state. According to the statistics given by N. C. Wright[5a] a quantity of liquid milk of 215 million maunds has a value of Rs. 107·5 crores as against a value of Rs. 100 crores for a quantity of 364 million maunds converted into ghee. Taking all the milk products together, the total value is estimated only at Rs. 185·9 crores for a quantity of 475 million maunds of milk utilized, while less than half of this quantity when sold as fluid milk secures more than half this value. The reason for this preference is to be found in the fact that the greater proportion of milk converted into products is buffalo milk which has a lower value than cow's milk, the difficulty of finding sales for milk as such in the rural areas where much of the production takes place and the availability of butter milk for own consumption by the producers in the manufacture of butter and ghee. The consumption of milk in rural areas and to an appreciable extent in urban areas too usually takes the form of the consumption of butter milk and curds which are found to be more easily digestible than pure milk. The villagers therefore prefer to convert their milk into ghee and

5. Taken from Rural Problems in Madras by S. Y. Krishnaswami, p. 217.
5a. Report, p. 159.

secure a money value for it, while at the same time providing butter milk, the most valuable part of the milk, for their own consumption.

The manufacture of butter and ghee in the rural areas is according to the country method of souring the milk with a lactic acid starter. This method while suitable to the climate is held to be the cause of the present low outturn of ghee per unit of milk. Nearly 10 to 15% of fat is retained in the butter-milk, with consequent benefit to the villager's family no doubt, but all the same inflicting an equivalent loss of cash return on the ghee produced. The use of the cream separator is claimed by certain research workers to increase the outturn of ghee, but in this process the by-product is separated milk and not butter-milk. The preferance which the villager's family has for butter-milk over separated milk as a beverage would perhaps stand in the way of any general adoption of the new process. But the preference is more the result of habit, a conservative taste and unfamiliarity with separated milk than of deliberate choice, and may be overcome if the new product is made available in sufficient quantities. In the manufacture of creamery butter there is some production of separated milk, but at present the total production of creamery butter forms only a negligible proportion of milk products.

But whether consumed in the liquid state or in the form of ghee or buttermilk, the rate of consumption in the State is very low, and in rural areas among the small holders, tenants and agricultural labourers it is especially so. The poorer sections of the agricultural classes do not consume any milk at all in any form, and that statement applies with equal force to the labouring classes in towns. Even the rate of consumption among the urban population is low and very rarely comes upto the minimum dietary requirement of 8 oz. per day. In Madras city it is estimated to be only 6·9 oz., in Madura, only 8·2 oz. and in Trichinopoly, only 7·1 oz.[6] Dr. N. C. Wright in 1940 found the rate of consumption per head per day of fluid milk in Madras to be only 1·6 oz. as against 9·9 oz. in the Punjab, 5 oz. in the U.P., 4 oz. in Bombay, 3·2 oz. in Bihar and Orissa, 2·2 oz. in Assam and 1·9 oz. in Bengal. Madras comes last among the States of India. Both from the point of view of the supply of 'first class' protein in the diet of the people and as a 'protective' food in a mainly vegetarian country, milk consumption must increase. The only way this objective can be realized is by increased production and a cheapening of the product. The rate of consumption directly depends on prices and incomes and

6. Rural Problems in Madras by S. Y. Krishnaswami, p. 218.

so both these factors have to be made favourable if the desideratum is to be achieved.

Basing the calculation on a minimum requirement of 8 oz. per head per day, milk production must be more than doubled if an adequate quantity of milk is to be made available. This may partly be achieved, as Dr. W. Burns has suggested,[7] by better feeding, better breeding and control of diseases and partly by an increase of milch cattle. Proper feeding on silage, good hay and concentrates is estimated to increase the yield by 30%. Better breeding, better management and control of diseases would likewise increase the yield by 15% each.[8] Feeding should be on efficient milch fodder such as berseem, lucerne, oilcakes, etc., the production of which more abundantly in the State is a pre-condition of improvement here. The suggestion made by Dr. Wright of undertaking mixed farming where a part of the farm will be devoted to the growing of fodder crops appears to be the only way in which the fodder problem can be solved efficiently and economically. It will, in addition, diversify farming operation, reduce the risks of cultivation and increase the income of the farmer.

Improved breeding will besides directly increasing the milk yield per cow, make a fuller utilization of the available fodder and thus indirectly too contribute to an increase. Better breeds of cattle give more milk on proportionately less fodder. According to Dr. Wright's calculations fodder requirement is decreased by 50% if the level of milk production is raised from 7 lbs. to 14 lbs. per day. The superior breeds of Madras give a much higher lactation yield than the non-descript varieties. The Ongole cows in Madras city give an average lactation yield of 2,500 lbs.[9] and when bred in farms under ideal conditions give as high yields as 7190 lbs. At the Chintaladevi Livestock Research Station the average lactation yield of Ongole cows has been 3526 lbs. and a few of them gave as much as 5,000 lbs.[10] Under village conditions the yield is lower. An enquiry conducted by the Imperial Council of Agricultural Research in 1939 in the Ongole area revealed that the average daily milk yield per cow was 4·64 lbs., the length of the lactation period, 9·54 months and the lactation yield 1,236 lbs.[11]

The Kangayam breed too, though generally a poor milker, when properly bred and fed is capable of giving a very much higher

7. Technological Possibilities in Agriculture in India.
8. W. Burns, *op. cit.*
9. Rural Problems in Madras, p. 210.
10. Livestock of Southern India by Littlewood, pp. 45-46.
11. Quoted in Rural Problems in Madras, p. 210.

yield. At the Hosur Livestock Research Station where a herd of about 170 Kangayam cows is maintained, the yields ranged on the average from 2,073 lbs. to 3,471 lbs. per lactation, and the maximum went up to 4076 lbs. The average milk yield of the foundation cows is only about 1493 lbs. per lactation and a daily average of 6·2 lbs.[12]

The performance of these superior breeds is an index of what may be achieved merely by the substitution of better animals for the inferior breeds now widespread in the State. Such wholesale substitution will not however be feasible, but through the selection of breeding bulls of the indigenous varieties a better variety of cows may be brought into existence.

Cross breeding with European stock too is another way of improving the milk yield, but as the experiments carried out in the Military Dairy Farm at Bangalore and the Hosur Cattle Research Station have shown, sustained improvement does not result from the process. The first half-bred gives almost double the milk yield of the indigenous dame but there is steady deterioration both in size and in milk yield in subsequent generations and mortality among calves is heavy. These may be overcome by maintaining the purity of the stud bulls and paying special attention to the calves. Both would involve much trouble and expert control and high cost of selection and breeding. Expert opinion therefore seems to be against the general practice of cross breeding with foreign stock. A better and more permanent result can be got through the proper selection of indigenous breeds.

For achieving permanent improvement as much attention should be given to the rearing of calves as to breeding them. Part of the low milk yield of cows prevalent at present is to be attributed to the neglect during the period of growth of female calves, and unless this practice is rectified, the efforts made in the direction of better breeding will fail to show appreciable results. Professional milkmen, especially in urban areas, due probably to lack of facilities, pay scant attention to this. They must be induced to do so by propaganda and if possible by certain money payments. Already a few schemes of subsidy have been inaugurated in the State since 1943-44, under which a subsidy of Rs. 4 a month (formerly it was Rs. 2) is being paid for every calf brought into the scheme. The condition of the grant is that the calves should be well fed and properly cared for and should be subject to the periodical inspection of the Veterinary Department. The schemes

12. Livestock of Southern India, Littlewood, pp. 68 and 69.

apply to the Ongole, the Kangayam and Hallikar areas and to the City of Madras.

Control of diseases is yet another way of bringing into existence healthier animals and thereby increasing the milk yield. Milk yield suffers not only through mortality among cattle, but also by incapacitation following an attack of contagious disease. All the contagious diseases which affect cattle, such as rinderpest, foot and mouth disease, haemorrhagic septicaemia, anthrax, black quarter, etc., prevail in the State, but among them rinderpest is more widespread and takes a heavier toll of cattle than the others. While mortality from the others has more or less been stabilized, from rinderpest it has been ever on the increase. While in 1935-36 it was only 2,752 and in 1936-37 only 5,102, in 1943-44 it was as high as 43,836 and in 1944-45, 29,084. Total mortality from all contagious diseases in 1944-45 was 54,803.[13] But mortality figures do not speak the whole truth regarding the ravages wrought by the diseases, for they do not say anything regarding the loss due to enfeeblement. In the case of rinderpest it has been estimated that while only 30% die of the attack, the remaining 70 are temporarily incapaciated. The proportion for foot and mouth disease is 1 and 99.

Attempts to control these diseases in the State, as in the whole of the country, have taken the form of giving protection to the individual animal by giving it the 'Serum Simultaneous' treatment. Under it a mild attack of the disease is artificially induced at the same time as the cure is given. This gives the animal immunity from the disease for several years. The efficacy of this treatment is now well recognized and so it has not been necessary to apply the element of compulsion recommended by the Royal Commission on Agriculture. Still the drawback of the method is that it does not permanently eradicate the diseases from the country as has been done in some of the countries of the West. The animals which are not innoculated, and they are obviously very numerous, still spread the diseases, and so they exist at all times in some part of the country or other. Permanent eradication will follow only if the infected animals and those others which have been associated with them are destroyed. This, in a country like India, is prevented by sentimental objection and the heavy sacrifice involved in the process.

However more effective enforcement of the Madras Cattle Disease Act of 1866 and the Madras Rinderpest Act of 1940 and a

13. Rural Problems in Madras by S. Y. Krishnaswami, p. 223.

prompter reporting of outbreaks by the village staff will enable the Veterinary Department to control the diseases more efficiently and reduce the loss inflicted on agriculturists.

While milk yield may be increased through all the methods adumbrated above, the doubling of milk production required to make the necessary quantity available to the consumers would require, in addition, an increase of milch animals. This may sound paradoxical, but nevertheless is rendered necessary, if the target figure is to be realised in the short run, by the fact that improvement of breed is bound to be a slow process involving many decades, if not centuries. A quicker means of increasing production must be found, and that lies undoubtedly in the direction of an increase of numbers. Compared with the other States of India, Madras has fewer milch animals, both cows and buffaloes, in relation to the density of population. We have here only 46·8 animals per square mile with a density in human population of 328·5, as against 102·7 animals for a population of 508·2 in the United Provinces per square mile, 54 animals for a population of 243·7 in the Punjab, 104·9 animals for a population of 646·4 in Bengal and 38·1 animals for a population of 232·9 in Bombay.[14] Doubtless our milch animals, as has been stated earlier, are more numerous in relation to human population than in Britain or other countries of the West, but in view of the wide difference that exists between the breeds and their milking capacity, such comparisons would appear to be fruitless.

Greater care given to the rearing of female calves, especially in towns and cities where mortality is heavy, the proper salvaging of dry cows, the reduction of the dry period which in most indigenous breeds is twice as long as the period of lactation, through better breeding, and the importation of milch cows and buffaloes from other provinces and states are the ways in which this can be done. The increased fodder that an increase of cattle population would require should be secured by the practice of mixed farming, adverted to earlier, and the intensification of cereal cultivation. If conjointly operated these two processes will simultaneously make available sufficient quantities of food and fodder and maintain the proper balance between human and cattle populations.

In the general policy of increasing numbers sufficient attention should be given to the superiority of the buffalo as a producer of milk. The average lactation yield of the buffalo is as much as

14. N. C. Wright: Report, p. 177.

one and a half times the cow yield, and a she-buffalo population of 3·0 million in Madras yields 5 lakhs maunds more milk than a cow population of 5·8 million. Moreover buffalo milk is richer in butter fat than cow's milk and so is more profusely utilized in the production of butter, ghee and curds than cow's milk. The buffalo subsists on coarse fodder and makes little demand on scarce concentrated feeds which milch cattle require. In the rural areas, therefore, where milk is mostly converted into ghee, it is the buffalo and not the cow that should increase. The existing proportion between the two, when compared with certain other States of India, is smaller, and this partly accounts for the low milk production of the State. In the Punjab where the highest per capita daily production of milk has existed (18·3 oz. in 1940) buffaloes bear a higher proportion to cows than any where else in India and actually exceed the cows in number. In fact the recent tendency all over India has been in the direction of an alteration in the relative density of cow and buffalo population in favour of the buffalo. This tendency has however been less marked in this State, and so needs to be accelerated in order to achieve the double object of increasing milk supply and keeping down numbers.

Already in the buffalo population of the State the female predominates and in recent years has been rapidly gaining on the male. While between 1930 and 1944 cow-buffaloes increased from 2·7 million to 3·0 million (including those ones used for work only), the bull-buffaloes decreased from 1·4 million to 1·2 million. In all the districts except Vizagapatam, Malabar and South Kanara the female predominates and in some of them which are famous for ghee production, such as Coimbatore, Salem, Kistna, Guntur, the Ceded Districts, etc., the females greatly outnumber the males. The predominance of the female is partly accounted for by the higher mortality among male calves and partly also by the exportation of male animals to the wetland tracts where they are found very useful in wet cultivation. Thus Coimbatore exports its bull-buffaloes to South Malabar and the male animals of the two Godavari districts go to Vizagapatam or Kistna and those of Guntur to Nellore.[15]

This natural increase in the female, welcome as it is from the point of view of milk production, should also be supplemented by an importation of the better breeds of the north. The Delhi Murrah buffalo is a superior breed and when farm bred has an

15. Livestock of Southern India: R. W. Littlewood, p. 146.

average lactation yield of 4,800 lbs. against an indigenous lactation yield of about 1,903 lbs. Average daily output is 18·9 lbs. against 6·53 lbs. of the indigenous varieties. These animals if imported in large numbers will directly increase milk yield and indirectly too will do the same by upgrading the native breeds. The Delhi herds of buffaloes stationed at Coimbatore and at Lam near Guntur have improved the local breed within a radius of 10 to 15 miles. The Agricultural Department stations breeding bulls in some other important towns and some cities also, such as Madras, Guntur, Coimbatore, Pattambi, Koilpatti, Taliparamba and Hagari.

Among the indigenous breeds there are a few good varieties which may also be used to improve the rest, the Toda buffalo found on the plateau of the Nilgiris hills, the Paralakimedi on the Ganjam hills, the Malabar breed which are to be found in the South-west portions of that district and in South Kanara. The Toda buffalo is a good milker, yielding daily from 10 to 12 lbs. of rich milk with an unusually well flavoured taste. But the breed is confined to the Nilgiris and has certain physical characteristics which mark it off from the rest. No attempt seems to have been made to breed it outside of the hills. The Parlakimedi buffalo seen in Ganjam and Vizagapatam is a useful general purpose animal and as a milker yields about 2,500 lbs. per lactation. The animals are larger and stronger than the usual ones and are good for slow heavy work, but cannot stand the sun so well. The Malabar-South Kanara breed is not famous as a milker, but is a good worker and is used in wet cultivation in both districts. A variety of this breed is specially kept by the Jain Bants for racing.

The organization of milk production in rural areas at present is as a side activity of arable farming. Each farmer may have, in addition to the bullocks he maintains for work on the farm, a couple of cows and buffaloes. They are fed on the coarse straw available on the farm itself and the grazing facilities available in the locality. No special attention or expense is incurred on their behalf except when they are in actual milk. Cost of production is therefore reduced to the minimum, and as calculated by Dr. N. C. Wright it does not on the average exceed 6 pies per lb.[16] When compared with cost per lb. in military dairy farms which under pre-war conditions ranged between 6½ and 12 pies, this is low and makes production and sale remunerative. If conducted as the main activity cost per unit is likely to be higher, and

16. Report.

though it may not be so high as in departmental management, it may be high enough in rural areas, in view of lower prices prevalent there, to make production unprofitable. Specialized dairy farms do not therefore appear to be feasible in rural areas. The best that may be done to place production on a sounder organization would be to make it a component of mixed farming, but not as the insignificant adjunct it is at present, but with equal weight given to it as arable farming. This particular type of organization will, while making production economical, effect a countrywide distribution of it and render a wider consumption of milk possible.

## CHAPTER XX

# THE GROW MORE FOOD CAMPAIGN

The Grow More Food Campaign was started in the summer of 1942 by the Government of India to increase the food supply of the country. The occupation of Burma by the Japanese had cut off the imports of rice and pulses to this country and occasioned a major food crisis. Other sources of supply of rice too were either in enemy hands or enemy controlled, and shipping difficulties prevented wheat supplies from being brought into India from Australia or countries of the New World. The only way of meeting the immediate difficulty was to try and grow more food within, and to that end the Campaign was conceived as a short-run programme. While the Government of India took the initiative in inaugurating the campaign and gave assurance to the provinces and states regarding finance, prices, markets, advice, etc., the main responsibility of conducting it was placed on them. Accordingly the Government of Madras started the Campaign in 1942, earlier than other States, and entrusted the work of conducting it to the Revenue, Irrigation and Agricultural Departments of Government.

The deficit in food production to be covered was larger in Madras than in any other State in India, a little more than 1/3 of the overall deficit of the country, and so the Campaign had to be conceived as one of greater urgency than elsewhere in India. From 1918 onwards, and possibly from an earlier date, foodgrains production here had been drawing farther and farther away from population. While per capita production of cereals was 416 lbs. in the quinquennium 1919-24, it was only 340 lbs. in 1942-43.[1] A like decline is noticed in the case of rice. From 250 lbs. per capita rice production declined to 215 lbs. in the five year period 1934-39 and to 197 lbs. in 1942-43. What was being produced was clearly inadequate to meet the internal demand, and so throughout the inter-war period the province had to rely on outside supplies to make good the deficit. The average annual net importation of grains and flour for the period 1919-21 was 378,000 tons and for the five year period 1934-39, it was 896,000 tons. By 1942, through

1. My article, Cereal Production in Madras, Journal of the Madras University, Vol. XVI, No. 2.

increase of population without a corresponding increase in production, the deficit had probably reached the million mark in cereals alone, without taking pulses into account. It was this deficit which had to be covered by the new efforts that were being put forth under the Campaign.

At the present time with a larger population to be fed, the deficit may be roughly placed at 2·2 million tons. The cereal requirement on the basis of the pre-war effective demand for food-grains may be computed at 8·7 million tons (husked grain), and normal production, without including the effects of the Grow More Food Campaign, at 6·5 million tons (husked). The Economic Adviser to the Government of Madras too has calculated the requirements of the State at present at 8·9 million tons, assuming 20 ounces as the normal ration, per adult per day, and taking production figures for 1943-48 into account has computed the deficit at 2·2 million tons.[2] The two calculations do not differ materially and so it may *be taken that the present deficit, if production is normal, is of the* order 2·2 million tons.

This implies that from 1942 up-to-date, the deficit has increased from 1 million tons to 2·2 million tons, in spite of the vigourous pursuit of the Grow More Food Campaign and the expenditure *of nearly Rs. 8·60 crores on it. This is a sad commentary on the* conduct of the Campaign and, in spite of extenuating circumstances, such as failure of rains, floods, cyclones, etc., definitely goes to show how precarious even to-day the food production of the State is.

Under the Campaign food production was sought to be increased in three ways, through an extension of cultivation into the culturable waste and current fallows, through greater intensification and through a diversion of acreage from short-stapled cotton to food crops. The third of these methods which was an equally important part of the programme in the earlier years has dwindled in importance since, as expectations were not fulfilled and the need has now arisen for increasing the acreage under cotton.

*Extension of Cultivation*: For effecting an extension of cultivation reliance is placed on new irrigational works, on special development schemes, on the extension of acreage in the delta

2. Grow More Food Campaign — Dr. B. Natarajan, Paper read before the All-India Agricultural Economic Conference, Hyderabad, Deccan — December, 1948.

areas, on soil and water conservation schemes, on land reclamation and colonization societies, on the general and special concessions offered to the cultivators and on the new powers vested in the Government. The greatest emphasis is laid on irrigational development, for without an ensured supply of water the agriculturists cannot be persuaded to bring new land under cultivation. To this end the Government have through its Irrigation Department embarked on the construction of minor irrigation works which when completed will irrigate nearly 537,186 acres of new land, leading to an increased production of 609,529 tons of cereals. Between 1943 and 1948, 150 of these works, involving an expenditure of Rs. 92·18 lakhs, were completed, bringing under irrigation about 377,522 acres of land and increasing production by 342,825. tons.[3]

Another measure contemplated, but not yet included in the plan, is the Tank Renovation Scheme under which nearly 27,000 tanks, scattered in 17 districts, will be renovated and repaired and restored to their original efficiency. The work is estimated to cost Rs. 8 crores, but the increased production due to this measure is expected to be sufficient by itself to completely wipe out the deficit. Subsidiary measures connected with this scheme are the sinking of wells in the ayacut of these tanks at a cost of Rs. 2½ crores, repairs to tanks in the Zamindari area at a cost of Rs. 3 crores and the improvement of spring ponds, spring channels and kassans at a cost of Rs. 2½ crores. When all these works are completed, which will take a period of two to three years, effective water supply is expected to be increased to nearly 5 million acres of land.

These minor works are in addition to the long term projects which the Government have under construction or contemplation, such as the Tungabadra Project, the Ramapadasagar Project and the Krishna Project, which however being long-term, do not figure in the short-term Grow More Food Campaign. They too in the long run will undeniably help in growing more food within the State, but how long that period will be cannot now be stated.

But as part of the short-run programme extension of cultivation is sought to be effected in the Cauvery Mettur Project area through extending irrigation and through the offer of special concessions, such as subsidy of Rs. 10 per acre on land reclaimed and loans free of interest for the first year and thereafter bearing interest at the low rate of 3% per annum. New assignments made in this area and in certain other areas to which the special con-

3. Statistical Assessment of the Grow More Food Campaign. By Dr. B. Natarajan — an unpublished paper.

cessions apply, are free of dry assessment and water charges too for two to six years, the period varying with the locality. As a first instalment the target to be reached was fixed here at 40,000 acres, but by 1946 the target was exceeded, the area brought under cultivation having been 60,157 acres at a cost to Government of Rs. 1,50,000. The second instalment of 10,000 acres was also exceeded, and now the third instalment has been fixed at 15,000. In the Krishna, Godavari and Periyar deltas and in plantation districts too these or similar concessions apply.

The special development schemes apply to Araku Valley in Vizagapatam district and to Wynaad taluk of the Malabar district. Since the areas are malaria ridden, effort is first directed to the eradication of malaria, and then to the well-being of the jungle tribes. The method adopted to bring land under cultivation is for the Government department to start a farm to serve as a model and to persuade the tribes to take up land alongside of the Government farm. As they become proficient in farming, the Government would withdraw from cultivation handing over the farm to the tribes. So far 625 acres in Araku Valley and 28,000 acres in Wynaad have been affected by the schemes.

Soil and water conservation are sought to be effected by bunding operations and these are practised with some success in Bellary district affecting an area of 2500 acres and in Vizagapatam district over an area of 7,500 acres.

For reclaiming land, special co-operative land reclamation and colonization societies have been formed, some of them specially meant for ex-soldiers, and land is assigned to them for cultivation. There are now 13 such societies working in the State. Manure, seed, implements, etc., are sold to them by Government depots at concessional rates and interest free loans, subject to certain limits, are granted for their purchase as also for the purchase of bulls. Certain other co-operative societies too are given loans for reclaiming land. In the reclamation work the Government department helps by making tractors and bulldozers available to the colonists. There are at present 145 tractors under the control of the Agricultural department. During the six-year period, 1942 to 1948, 285,573 acres were thus assigned, but actual cultivation seems to have started only on 169,815 acres. Increased production is estimated at 286,161 tons of paddy.

In addition, Government have permitted the cultivation of all unoccupied assessed or unassessed Government land in forest areas, at the sea front, alongside the railway track, adjoining drainages

and everywhere else with food crops free of dry assessment for a number of faslis. So also compounds of Government quarters and institutions, of schools, hospitals, orphanages, sanatoria, churches, etc., and vacant village and town sites, backyards of homes and tank beds may all be cultivated with vegetables free of assessment. Issue of permits to cultivate Government land is usually made to landless labourers and tenants with exemption from security deposits attached to such permits. Water is supplied to them wherever possible at concessional rates and breaches of irrigational rules are easily condoned. Poor ryots, colonists in land reclamation societies and educational institutions are given free supply of seed, subject to the limit of Rs. 100 for each district for poor ryots, Rs. 2 to 5 per acre of wet land to colonists and Rs. 50 per educational institution. Loans are also granted to assignees of assessed or unassessed waste or poramboke lands upto Rs. 100 in each case under the Agricultural Loans Act for growing food crops. The District Agricultural officers are empowered to grant such loans for the purchase of machinery, seed or manure.

In hilly districts for extending vegetable cultivation, a special scheme of loans has been inaugurated. Vegetable cultivation has been included among the purposes for which loans under the Agricultural Loans Act may be given, and interest free loans and loans bearing interest are given upto maxima of Rs. 600 and 700 for clearing the land and for the purchase of manure, seed, etc. For the supply of vegetable seeds, a seed farm has been started at Wellington, and this farm in 1947-48 supplied 1,200 lbs. of vegetable seeds and 51,000 seedlings of the total value of Rs. 10,500. As a result the acreage under vegetables is estimated to have increased by 12,000 acres, producing an additional quantity of 17,200 tons.

To remove legal difficulties, if any, and to secure power to the Government to compel the cultivation of fallow land in zamindari areas and to execute the repair of neglected irrigation works there, two Acts were passed, the Madras Estates Land (Temporary Amendment) Act, 1944, and the Madras Irrigation Works (Repairs, Improvement and Construction) Act, 1943 (later amended in 1945). The first Act empowered the Government to make temporary assignment of ryoti land for periods of three to five years without conferring occupancy rights on the assignees, and the second Act authorized Government to carry out repairs or improvements to irrigation works and construct new works and recover the cost of such works from the owners.

A third Act passed in 1946, viz. the Madras Essential Articles Control and Requisitioning (Temporary Powers) Act, was also intended to extend the acreage under food crops by the prohibition of the cultivation of certain varieties of cotton. This replaced the Defence of India Rules prohibiting such cultivation. Under this Act the Government secured power to prohibit the cultivation of Cocoanadas, Mungaris, Karungannis, Nadams, etc. in the areas where they are usually grown except as a mixed crop with food, and also the power to grant a bonus of Rs. 4 per acre for the substitution of a mixed crop for the pure crop.

In all these ways the acreage under foodgrains and vegetables is sought to be increased. The total acreage newly assigned for food cultivation in the years 1942-48 is estimated by the Economic Adviser to the Government of Madras at 285,572·80 acres, giving an approximate yield of 84,907·46 tons of food. Details of assignments with their yields are given in table LVII.

*Intensive Cultivation*: Another equally important, or perhaps more important, plank of the Grow More Food programme is intensification of cultivation. The aim here has been to secure a larger outturn per acre on land already under foodgrains and to extend the area under double cropping. The measures taken on this behalf are the supply of seed, manure and implements through Government agencies, improvement and extension of irrigational facilities through well construction and the grant of loans and subsidies to cultivators.

Distribution of improved seed through a seed multiplication and distribution scheme has been in existence since 1943, and by the end of 1947-48, 97,660 tons of seed are estimated to have been distributed. The scheme applies to paddy, millets, pulses, groundnut and green manure with much greater concentration on paddy seed. In the five-year plan drawn up in 1947 paddy seed distribution alone was expected to cover nearly 7·6 million acres under paddy by the end of the period. Nearly 139 improved varieties have been evolved in paddy and 51 in millets and the high yielding varieties among them are selected for multiplication and distribution. The increase in yield is placed at 15 to 20% for paddy and 10 to 20% for millets. The area under seed farm was by the end of 1947-48, 158,000 acres. Paddy seed distributed annually is about 9,000 tons and millet seeds about 100 tons. The scheme is worked through maintaining primary seed farms and the sale of the seed grown in them through Government depots. Strains evolved by the Agricultural Department and suited to the different localities are first distributed to select cultivators who are expected to maintain the primary seed farms. The seed grown there is purchased

at an agreed price by the Agricultural Department and then sold to other cultivators. The sale price is fixed at 12½% less than cost and excludes the overhead charges of distribution. The subsidy thus given is shared between the State Government and the Centre in the ratio of 50 : 50. The Director of Agriculture is given a permanent advance of Rs. 28 lakhs for running this trading scheme, and it is expected that through the turnover of this capital, seed worth a multiple of this amount will be distributed to the ryots. Increased production due to improved seed during the quinquennium 1943-48 is estimated at 159,893 tons. What percentage this increase bears to the previous outturn is not known. Taccavi loans too are given on a liberal scale to the ryots for the purchase of seed.

Manure distribution also is undertaken by the Department of Agriculture through its depots and sub-depots maintained in each taluk or through co-operative societies. The manures sold are chemical fertilizers, such as ammonium sulphate, ammonium phosphate and super phosphate, oilcakes, principally groundnut cake, and bonemeal and fish manure. During the four year period, 1944-48, 224,054 tons of chemical fertilizers and 578,035 tons of oilcakes were thus distributed. These sales were subsidized by the Government, as in the case of seed distribution, to the extent of 10% of purchase price and the entire cost of establishment. The entire allotment of chemical fertilizers made to the State by the Central Government and 60% of the oilcakes manufactured in the State are purchased by the Government for distribution. The Director of Agriculture is given a permanent advance of Rs. 52 lakhs to run this trading scheme, and the loss involved is met by the Government. Additional food production due to manuring during the four years 1944-48 is estimated at 445,159 tons of rice at a cost to Government of about Rs. 30 lakhs.

In addition, production has been increased through the supply of compost manufactured in urban and rural areas. Two officers and 68 sanitary inspectors, specially trained for the purpose in the Bangalore process, are engaged in the scheme of compost making, covering one rural area, 58 municipalities and 32 panchayat boards. Urban production in 1947-48 was about 52·46 lakhs cubic ft. about half of which was distributed. Rural production was only about 3·7 lakhs cubic ft. out of which 2·83 lakhs cubic ft. were distributed. Additional production due to this may be estimated at 50,000 tons.

The Agricultural Department also has, as one of its responsibilities, the supply of implements to cultivators. Iron and steel

allotted to the State under the control scheme is taken in bulk by the Government and a portion is distributed to select firms for manufacture of implements and another portion to ryots and village blacksmiths. The implements manufactured by the firms are stocked in the 526 agricultural depots and sold to needy ryots at fair prices. Scrap iron with the merchants also is allotted to fabricators. In 1948, 31,000 tons of iron and steel were thus made available to agriculturists. Loans are given to ryots, as in the case of seed, for the purchase of manure and implements.

In addition to the supply of ingredients of scientific agriculture, the intensification programme includes also a well-digging scheme designed to increase the water supply and enable two crops to be taken where only one was being taken before. Such a scheme formed a part of the Grow More Food Campaign right from the start, and the Central Government undertook to meet 2/5 of the subsidies given. But the earlier schemes applied to certain specified districts only, such as the Ceded Districts, Chittoor, North Arcot, Salem, Chingleput, Madura, Ramnad and Tinnevelly. Under these schemes special loans of Rs. 310 per well were given to ryots in addition to the usual taccavi loans for sinking new wells or repairing old ones. 25% of cost was treated as a subsidy. In 1943-44 the scheme was given general applicability throughout the State with the exception of the district of the Nilgiris. Under the earlier schemes subsidies were given for 64,000 new wells and the repair of 3,125 old wells. Since however progress under the schemes was considered insufficient, a new well-subsidy scheme, including renovation of old tanks also, was inaugurated in March 1947, of applicability throughout the State with the exception of the districts of Madras and the Nilgiris. The subsidy offered was increased to 50% of cost, subject to a maximum of Rs. 300 per well and Rs. 500 per old tank. In 1948-49 the Nilgiris was also brought into the scheme, and the subsidy there was fixed at Rs. 500 per well. The subsidy for the Ceded Districts also was raised to Rs. 750 per well. Under all the schemes taken together subsidies have been given for 221,204 wells, at a cost to the Government of Rs. 5,07,03,660. But unfortunately only about 84,812 wells have been completed with beneficial effects on 102,751 acres of land. Additional production upto the end of 1947-48 is estimated at 43,122 tons. For the amount of money spent this is poor showing indeed.

Besides these measures relating to extension of the area under food crops and intensification of cultivation, the Grow More Food Campaign includes also programmes of increased milk, egg and

fish production. Milk production is sought to be increased through the salvage of dry cows and buffaloes, for which certain societies have been formed in the City of Madras, and the proper rearing of calves. For the latter a scheme of subsidy has been inaugurated, under which a subsidy of Rs. 35 per calf is given by the Government to owners in the City of Madras for every healthy nine months old calf. Besides, co-operative milk supply societies and unions are given loans on a liberal scale for the purchase of milch animals. Cattle feed is sold at reasonable prices and prizes are offered for highest lactation yields. Municipal Councils have also been asked to restrict the slaughter of milch cattle.

For egg production a Special Poultry Officer has been appointed and two developmental schemes have been started, one in Katpadi and the other at Mangalagiri in Tinnevelly district. Co-operative Egg Marketing Societies too are offered certain subsidies.

Fish production is being increased through the conduct of 40 inland and marine schemes, training of fishermen in deep sea fishing, building improved types of fishing boats and the provision of transport vans and refrigerating arrangements.

*The Food Production Drive — 1949* : Though these were the main planks of the programme launched in 1942 and co-ordinated and crystallized in the five-year plan of 1947, recently, that is about the middle of 1949, a new vigour has been given to the food production drive by the announcement by the Prime Minister of India that all food imports would be stopped by 1951 and that the country should attain self-sufficiency in the matter of food by that year. This announcement was followed by energetic measures to intensify the food production drive, and both at the Centre and in the States Food Production Commissioners have been appointed. These Commissioners have the special responsibility of planning for self-sufficiency and supervising the execution of accepted policy. On the Food Production Commissioner's suggestion a new two-year plan of intensive cultivation has been drawn up for the State, with a 13 point programme, involving a total cost of Rs. 3·5 crores.[4] Part of this cost is expected to be met by the Central Government, i.e. Rs. 1·4 crores, and the balance of cost, viz. Rs. 2·1 crores will have to be met by the State Government. The anticipated increase in the production of foodgrains is about 471,000 tons by the end of 1949-50 and 587,000 tons by the end of 1950-51.

4. Press Note issued by the Government of Madras — October 13, 1949.

The following schemes are included in the plan:—

1. Land development by mechanical cultivation and installation of pumping sets.

2. Land development by mechanical cultivation and supply of electric motor pump sets.

These two schemes are designed to instal lift irrigation where other irrigational facilities are not possible. The Agricultural Department will hire out to cultivators or sell to them on an instalment payment system, oil engines and electric pumps to pump water from a lower to a higher level.

3. Opening of a Central Agricultural Engineering Stores and Supply Centre to supply machinery and implements at fair prices.

4. Land development by mechanical cultivation and reclamation by tractors and bulldozers. The Government would purchase these and hire them out to cultivators for the purpose of reclaiming waste.

5. Soil conservation and contour bunding in the Ceded Districts and in Vizagapatam. The Government will carry out the bunding operations and will recover half the cost from the ryots benefited by the measure under the Madras Land Improvement Schemes (Contour Bunding and Contour Trenching) Act, 1949.

6. Distribution of iron and steel for agricultural purposes. Ryots will be supplied with cart tyres, axles, G. C. sheets and other agricultural implements at controlled rates through the agricultural depots.

7. Scheme of subsidy for rural compost making. The subsidy fixed is Re. 1 per ton on compost made from waste vegetable matter in pits dug by the ryots, subject to the supervision of the Agricultural Demonstrator.

8. Control of pests and diseases of crops. Under this scheme pesticides will be stored in agricultural depots and supplied to ryots at concessional rates. Sprayers and dusters will be lent to ryots. A special plant protection staff has been set up to carry out the scheme.

9. Scheme for the subsidized distribution of phosphatic manures at half the cost in select areas.

10. Scheme for the distribution of ammonium sulphate at cost price.

11. Scheme for the intensive multiplication and distribution of improved paddy seeds.

12. Scheme for the intensive green manuring of food crops.

13. Scheme for the intensive multiplication and distribution of improved millet seeds.

Under schemes 11, 12 and 13 seeds will be raised in selected seed farms by ryots and then distributed to cultivators through Agricultural depots at controlled rates. The seed farmers will be paid a subsidy by the Government.

This two-year programme is to be a more intensive drive for increasing food production and deliberately tries to secure the whole-hearted co-operation of the cultivators. It has been the experience so far that without the active co-operation of the cultivators, no great results can be expected, and so in the new drive, that co-operation is to be enlisted through the close association of the cultivators themselves in the formulation and execution of the plan. In every district, every taluk and every firka, organizations are to be set up wherein Governmental agents and cultivators will together act in the execution of the programme. Under this plan in some of the districts enlightened farmers too are to be selected for organizing demonstration plots, agricultural associations and exhibitions in each firka. They are to be given an honorarium of Rs. 50 per month and the help of a demonstration maistry. Through this intensive drive and the resultant increase in food production, it is hoped, the entire food deficit of the State will be covered. Reclamation of waste land also is to be furthered. Acreage actually reclaimed in 1949-50 was 38,500 acres, and the target fixed for 1950-51 is 80,866 acres.

*The Cost of the Campaign*: The Economic Adviser to the Government of Madras[5] has estimated the recurring and non-recurring expenditure on the Campaign for the period 1944-48 at Rs. 6·36 crores. This includes

| | | | |
|---|---|---|---|
| Minor irrigation schemes | .. Rs. | 92·18 | lakhs |
| Subsidy on well-construction and repair, 1944-49 | .. ,, | 507·04 | ,, |
| Subsidy on Fertilizers and oilcakes | .. ,, | 30·00 | ,, |
| Subsidy on improved seed | .. ,, | 6·88 | ,, |
| | Rs. | 636·10 | ,, |

This estimate obviously does not cover all the items incurred on the Campaign and excludes the expenditure incurred prior to 1944 or after 1947-48 except in the case of well-subsidy. The items excluded are the increased expenditure on the Agricultural Department because of the special responsibility placed on that department in respect of the Campaign and the loss sustained by the Government on account of the land revenue and water rate concessions. It is difficult to calculate the increased expenditure on the Agricultural Department caused by the Campaign, for some

5. Statistical Assessment of the Grow More Food Campaign — unpublished paper — Appendix XIV.

part of that increase is of a more permanent character and will obviously continue even after the Campaign has come to an end. Still it cannot be denied that the steady and striking increase in that expenditure from Rs. 20·61 lakhs in 1938-39 to Rs. 240·89 lakhs in 1949-50 has been due, apart from inflation, to the conduct of the Campaign by that department. Out of the increase in expenditure during the period, 1942-48, of Rs. 292·21 lakhs over the pre-war scale, at least Rs. 85 lakhs, on a conservative estimate, may be attributed to the Grow More Food Campaign. Land revenue and water rate concessions may roughly be estimated at Rs. 6·4 lakhs. When these items are added and the well-subsidy given in 1948-49 deducted we get an estimate of total expenditure till the end of 1947-48 of Rs. 631·45 lakhs. To this if we add the expenditure incurred in 1948-49 and 1949-50, we get the following figures : —

| | | |
|---|---|---|
| Expenditure incurred till the end of 1947-48 | — Rs. 631·45 | lakhs |
| Expenditure on the Agricultural Department 1948-50 | — Rs. 123·45 | „ |
| Well-subsidy — 1948-49 | — Rs. 186·05 | „ |
| Subsidies on manures and seed (proportionately) — 1948-50 | — Rs. 17·74 | „ |
| | Rs. 958·69 | „ |

In addition to these items some expenditure would have been incurred in the two years on minor irrigation schemes and on well construction in 1949-50, but no information is available as to how much has been spent that way. In the absence of information one would not be justified in making a guess, since these items belong to the non-recurring category. However for minor irrigation schemes under the Grow More Food Campaign budget allotments were made in each of the two years under revenue account and under capital account of Rs. 32 lakhs and Rs. 38 lakhs respectively, but how much of these were actually spent is not known. The total expenditure therefore is likely to be higher than the estimate given above.

If to this total be added Rs. 350 lakhs set apart for the two-year plan inaugurated in 1949, the aggregate will rise to about Rs. 1218·69 lakhs.

In addition, loans advanced to cultivators under various provisions for the years 1942-50 come to about Rs. 924·36 lakhs. For 1950-51, the budget provision is for Rs. 87 lakhs. These loans have

been given at reduced rates of interest (5½% instead of 6¼%) and some of them at 3% and still others, interest free.

Part of the expenditure has been met by the Central Government through grants to the State Government, but full information is not available as to the amounts of such grants. From 1944-47 the total of such grants given, as calculated by the Eastern Economist,[6] came to Rs. 210·23 lakhs. Under the two-year plan inaugurated in 1949, the Central Government's share of expenditure is estimated at Rs. 140 lakhs.

*Results of the Campaign*: It is very difficult to accurately assess the results of the Campaign, for full information is lacking, and such information as is available fails to give a true picture of the state of affairs. Crop statistics are really the guide to such assessment, but the yield of crops fluctuates so violently from year to year, owing to the seasonal factor, that it is difficult to determine what increase or decrease should be attributed to the seasonal factor and what to the Campaign. The actual variation in yield even when positive can only be a rough measure of the success of the Campaign, for a great part of the expenditure incurred has been on permanent investments which will take time to yield results and will, once they begin to yield, be a perennial source of increasing production. Even this rough measure is unavailable here for the reason that the State has been afflicted by an unrelieved succession of abnormal seasonal conditions since 1945-46. Droughts, floods, cyclones have all done their nefarious work and virtually rendered the Campaign nugatory of results. The weighted average seasonal factor, as calculated by the Economic Adviser[7] to the Government of Madras, was 91 for the four years, 1940-44, and only 84 for the succeeding four-year period, 1944-48. Average production of cereals fell from 7,475·5 thousand tons in the first period to 6671·8 thousand tons in the second period.

The seasonal factor however does not completely account for the fall in production. If that were the only factor operating, production should have been higher than what it was. According to the Economic Adviser to the Government of Madras (in the work quoted already) there were a few other factors also operating, viz., the fall in acreage under millets by nearly 1·3 million acres, principally through diversion to groundnut, the shift from ragi to

6. October 22, 1948.

7. Statistical Assessment of the Grow More Food Campaign (unpublished).

certain other millets, resulting in a fall of output, and the secret diversion of manures to commercial crops. These were all bound to decrease the yield of millets.

Now, it is against this background that the results of the Grow More Food Campaign has to be assessed, and so the only way to do it, is to credit the measures taken with their normal result. This has been done by the Economic Adviser in the work quoted above in the following manner for the five years ending 1947-48.

| | | |
|---|---|---|
| Through Free assignment of land | .. | 2,86,161 tons |
| Minor irrigation works | .. | 2,88,294 „ |
| Well-digging | .. | 43,122 „ |
| Application of fertilizers and oilcakes | .. | 3,73,883 „ |
| Distribution of improved seed | .. | 1,35,961 „ |
| | | 11,27,421 „ |

(No figures are available for the later years)

This aggregate works out to an average of 2·25 lakhs tons a year which is the normal increase in cereal production that may be attributed to the Grow More Food Campaign. When related to the expenditure incurred and to the deficit to be covered, this result, mathematical though it is, is thoroughly disappointing, and points to the difficulty involved in increasing food production and the large leeway still remaining to be covered. For the result achieved, the expenditure incurred has been phenomenally high. It works out to Rs. 56 per ton, taking both recurring and non-recurring expenditure into account, and Rs. 10 per ton on recurring expenditure alone. Relating the increased yield through intensive cultivation to the cost incurred on the subsidized sale of manures and seed, the cost to Government works out to Rs. 7 per ton against a price of Rs. 266 per ton. From the point of view of making sufficient quantities of food available to a growing population, this rate of expenditure cannot be deemed too high, for the alternatives to it are importation of food from abroad at higher cost or starvation for millions. The Economic Adviser has estimated that if the additional quantity produced had been imported from abroad the cost to the Government would have been Rs. 40·04 crores. Still, considering the need there is for making food available to the people at as low a price as possible and for reducing the burden on the tax payer, this rate of expenditure is definitely high. Would it not be possible with the practice of greater economy and stricter

*supervision to* secure the same results at less expenditure or better results for the same expenditure ?

It is clear from the figures given above that intensive cultivation gives immediately better results than an extension of the area, and, besides, has the advantage of doing it without upsetting the balance between food and non-food crops or taking away resources which would be badly needed for the development of the economy in other lines. The greatest emphasis has therefore to be placed on it, and it is heartening to find that the two-year plan inaugurated in 1949 is almost exclusively a plan of intensification. Never-the-less there are limits to what may be achieved this way, and so the attempt to bring in as much of the cultivable waste and current fallows as possible should in no way be relaxed.

What has been achieved is only a tenth of what is needed, and unless all methods are tried, there can be no possibility of reaching self-sufficiency by 1951. With the largest land area among the States of India and the largest acreage under current fallows and with a man power equal to the task awaiting, there can be no reason why the feat, difficult though it is, cannot be accomplished.

Though the short-run objective of the Campaign is to cover the food deficit, and its success has to be judged on that basis, yet as a long-run objective too it has a standing and should find a place in a long-run agricultural plan. For an evergrowing population, increasing food production is a long-run need which cannot be relegated to a second place in a predominantly agricultural economy such as ours. While providing the essential means of subsistence, increasing food production will also provide the employment required and obviate the necessity to depend upon precarious outside supplies.

## CHAPTER XXI

# AGRICULTURAL PRICES AND INCOMES

The study of agricultural prices in the State is rendered difficult by the paucity of data on the subject. For some of the principal commodities district harvest prices are published every year in the Season and Crop Report. But the list is not full or exhaustive, and for some years no quotations are given even for some of the commodities included in the list. The gaps cannot be filled from other sources as there are no other sources available to the investigator. Some of the price quotations used in this study were taken from the Season and Crop Reports, and others, especially the ones relating to the year 1947-48, were kindly supplied to me by the Economic Adviser to the Government of Madras.

No historical survey of prices in recent years is undertaken here, except in the case of rice which is the staple food of the State, as the prices of foodgrains were under control during the war and post-war periods, and in the case of the uncontrolled commodities price fluctuations were so fitful as to defy analysis. All that is attempted here is to review prices as they prevailed in the latest year for which quotations are available with a view to appreciating the rise which has taken place from the pre-war level. Since the principal aim of this book is to give a picture of the present position of Madras agriculture, this is all that is germane to the study. A comparison is therefore made between 1948-49 prices and the 1938-39 or 1937-38 prices. The index numbers which have been computed for the year 1948-49 have either 1938-39 prices or 1937-38 prices as base. In a few cases where no quotations were available for either of these two years, the prices of 1939-40 were adopted as base. In the relevant tables, the base year for the index figure is clearly indicated. Harvest prices used here and figuring as such in the Government Report mentioned above, are not really producer's prices, but wholesale prices prevailing in the harvest months in the various centres. To arrive at producer's prices, therefore, certain deductions in respect of transport and marketing costs have to be made. This has been done in the calculation of the gross and net incomes of agriculturists. Wherever harvest prices as such were not available, wholesale prices have been used. This has been necessary in the case of the commercial crops. The State figures are based on the median average of district prices.

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*Agricultural Prices in 1948-49* : Index numbers relating to the harvest prices of the principal agricultural commodities for the year 1948-49 with the prices of 1938-39 as base are given in table LVII.

From a study of these index numbers it is seen that all agricultural prices rose phenomenally between the years 1938-39 and 1948-49, but in the case of foodgrains the rise has been much more moderate because of severe control than in the case of commercial or money crops. The highest increases are noticeable in groundnut where the index figure for the State is 915·3 and in some districts is as high as 964·8, 923·6 and 900·0. In Bellary and Cuddapah lower numbers are registered. Prices of cocoanut too were in 1947-48 five times and six times pre-war prices, the State figure being 550·2. Tobacco and cotton did not rise so high, but were more in line with the prices of foodgrains. No State figures have been deduced for these two, as the quotations are for various grades. The rise in the price of jaggery manufactured out of sugarcane curiously enough has been lower than in the case of foodgrains. For the State it is only 217·1 and in most districts the figure is below 200.

For the commercial crops too curiously the variations in district prices is as great as in the case of foodgrains, unmistakably indicating that transport bottleneck has been the major factor standing in the way of the equalizing process.

Among foodgrains cumbu and ragi on the whole appear to have had higher rises in their prices than rice. While the State index number for rice is only 414·2, for cumbu and ragi they are 646·3 and 577·1. The figures are high even in those districts where they are chiefly grown. This is just the opposite of the feature noticed about rice, viz., the prevalence of lower prices in the principal delta regions. The higher rise in the prices of these dry crops is due perhaps to the diminution in the area sown to these crops and the consequent decrease in yield, since in the years 1945-48 the area sown to these crops and the yield were lower than the average for the previous quinquennium. This diminution is noticeable even in the drier regions which specialize in this cultivation. Obviously the rise of prices seems to have had no effect on production. But in 1948-49 both the acreage and the yield were back again at the 1940-45 level and so the high level of prices in that year cannot be explained by this phenomenon. In groundnut, cocoanut and other oil-seeds 1945-46 and 1946-47 witnessed increases in acreage and yield over the average for the quinquennium 1940-45 in response

TABLE LVII

*Madras State*

Index Numbers of Harvest Prices of Principal Crops — 1948-49 (Base — Prices of 1938-39 — 100)

| District | Rice 2nd Sort | Cholam | Cumbu | Ragi | Sugar-cane jaggery | Ground-nut | Cotton | Cocoanut | Tobacco | Redgram | Black-gram | Green-gram | Horse-gram | Bengal-gram |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Vizagapatam .. | 726·8 | — | — | 666·6 | 196·8 | 870·7 | — | 550·2[3] | 260·6[3] | — | — | — | — | — |
| E. Godavari .. | 475·0 | 306·6[1] | — | 344·1[1] | 152·5 | — | — | — | — | — | — | — | — | — |
| W. Godavari .. | 368·5 | 255·7[1] | — | 244·4[1] | — | — | — | — | — | — | — | — | — | — |
| Kistna .. | 394·6 | 211·8[1] | — | — | — | — | — | — | — | — | — | — | — | — |
| Guntur .. | 405·5 | 417·5 | 500·0 | — | — | 878·0 | 303·8 | — | V. 330·0[3]<br>L. 334·0 | — | — | — | — | — |
| Kurnool .. | 358·2[2] | 624·3 | 582·9[1] | — | — | 923·6 | W.N. 467·2<br>M. 361·6 | — | | — | — | — | — | — |
| Bellary .. | 351·9[2] | — | — | — | 137·9 | 812·8 | | — | — | — | — | — | — | — |
| Anantapur .. | 449·1 | 581·0 | 950·0 | 579·4[1] | — | 900·0 | — | — | — | — | — | — | — | — |
| Cuddapah .. | 566·6[2] | 696·9 | — | 366·0[1] | — | 842·1 | — | — | — | — | — | — | — | — |
| Nellore .. | 286·2[2] | 417·1 | 426·6 | — | — | — | — | — | — | — | — | — | — | — |
| Chingleput .. | 478·5 | — | — | 365·3[1] | — | — | — | — | — | — | — | — | — | — |
| S. Arcot .. | 474·5 | — | — | 446·0[1] | 295·2 | — | — | — | — | — | — | — | — | — |
| Chittoor .. | 566·1 | — | 625·0 | 657·1 | 205·3 | — | — | — | — | — | — | — | — | — |
| N. Arcot .. | 410·1 | — | 637·5[1] | 786·9[1] | 247·1 | 837·2 | — | — | — | — | — | — | — | — |
| Salem .. | 310·0[2] | 354·7[1] | 398·1 | 492·8 | 213·2 | — | — | — | — | — | — | — | — | — |
| Coimbatore .. | 529·4[2] | — | 657·1 | 657·1 | 271·4 | 964·8 | K. 351·1<br>C. 332·2 | — | — | — | — | — | — | — |
| Trichinopoly .. | 426·9 | 340·0[1] | — | — | 296·7 | — | — | — | A. C. 370·0[3]<br>P. C. 358·0 | — | — | — | — | — |
| Tanjore .. | 355·5 | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Madura .. | 427·9 | 587·7[1] | 678·4[1] | 693·0[1] | — | — | — | — | — | — | — | — | — | — |
| Ramnad .. | 466·6 | 483·7[1] | 654·7 | 548·8[1] | — | — | — | — | — | — | — | — | — | — |
| Tinnevelly .. | 550·0 | 293·4[1] | — | 272·7[1] | — | — | — | — | — | — | — | — | — | — |
| Malabar .. | 413·7[2] | — | — | — | — | — | — | 560·8[3] | — | — | — | — | — | — |
| S. Kanara .. | 374·2 | — | — | — | 197·0 | — | — | 468·5[3] | — | — | — | — | — | — |
| The Nilgiris .. | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Madras City .. | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| The State .. | 414·2 | 413·5 | 646·3 | 577·1 | 217·1 | 915·3 | — | 550·2[3] | — | 527·4[3] | 550·3[3] | 556·1[3] | 568·1[3] | 394·6[3] |

1. Base 1939-40.
2. Base 1937-38.
3. Index applies to 1947-48.

W. N. White Northerns
V. Virginia
M. Mungari

A. C. Air cured
K. Karunganni
P. C. Pit cured

C. Cambodia
L. Local

undoubtedly to the rise of prices. The same phenomenon is noticed in the case of tobacco, but as in the case of the dry grains, cotton experienced a decrease. Relatively, cotton prices were lower than the prices of other commercial crops and so the acreage under it went down. This relative position in the structure of prices also accounts for the very slow growth, in spite of intensive propaganda, in the acreage under rice. The cereal acreage as a whole was diminishing during the years 1945-47, and though rice was showing some improvement, not very appreciable though, other cereals were steadily losing ground. The severe control of grain prices put foodgrains at a disadvantage in the competition for land and frustrated much of the effort expended in the Grow More Food Campaign.

On the other hand, the prices of pulses rose to greater heights, and except in the case of bengalgram, the index numbers for the City of Madras are higher than 500. Quotations are not available for the rural areas, but wholesale prices pertaining to the City of Madras may be taken as indicating the general trend throughout the State.

The table relating to the index numbers of retail prices of vegetables at certain centres on 6-11-1948 given in table LVIII also shows that vegetables too for which the demand is local and sales almost always retail, rose inordinately in prices. Much variation is seen as between centres, but on the whole it may be asserted that prices rose to four times and more as the State figures show and in some centres went as high as eight times and ten times their pre-war level. However these figures have to be accepted with care as they relate to a particular day in the year and do not eliminate seasonal fluctuations. These quotations were made available to me by the Economic Adviser to the Government of Madras.

No index numbers for agricultural prices as a whole for the districts or for the State have been compiled because of the immense difficulties involved in the process. But an indication as to the level reached is given by the rural price index numbers compiled by the Economic Adviser to the Government of Madras and published in the Fort St. George Gazette. They are compiled for 13 centres scattered throughout the State and apply to December 1949 with the average prices from July 1935 to June 1936 as base. Rural price index numbers and food price index numbers for those centres are given in table LIX.

From the table it may be gathered that the index numbers pertaining to rural prices as a whole have a range of 389 to 526

TABLE LVIII

*Madras State*

Index numbers of retail prices of certain vegetables as they prevailed on 6-11-1948

Base 1-9-1939, 100

| Place | Potatoes | Brinjal | Beans | Lady's fingers | Elephantyam | Onions | Pumpkin | Greenleaf | Bananas |
|---|---|---|---|---|---|---|---|---|---|
| Madras City .. | 544·8 | 625 | 500 | 291·3 | 379·1 | 669·2 | — | — | — |
| Vizagapatam .. | 457·1 | 640 | — | 533·3 | 800 | 320 | 866·6 | — | — |
| Ellore .. | 350 | 500 | — | 600 | 400 | 300 | — | 400 | — |
| Bellary .. | 300 | 600 | — | — | 300 | 500 | 600 | 600 | — |
| Calicut .. | 400 | 320 | — | 866·6 | 700 | 350 | 466·6 | — | 1066·6 |
| Cuddalore .. | 520 | 233·3 | — | — | 282·3 | 240 | 400 | — | — |
| Trichinopoly .. | 400 | 342·8 | — | — | — | 600 | 200 | 400 | — |
| Madura .. | 400 | 500 | — | — | 266·6 | 320 | 600 | — | — |
| Coimbatore .. | 400 | 375 | — | — | — | 450 | 300 | 200 | — |
| The State * .. | 400 | 426·6 | — | 493·9 | 505·5 | 420 | — | — | — |

* Based on median average.

and the index numbers pertaining to food prices vary from 495 to 567. For rice the range is between 338 and 500. The median average for the first group is 439, for the second 456, and for rice, 436, showing that food prices rose slightly higher than other rural prices and that rice prices had lower rises almost everywhere. This conclusion is identical with the one drawn from the earlier set of figures. But while comparing the two sets of figures it should be noted that they have different years as bases.

*Rice Prices—Second Sort*: Table LX gives index numbers of the prices of rice, second sort, by districts for the years 1938-39 to 1948-49. For the State as a whole, the median average of district prices is given. From a study of the table the following deductions may be made.

1. After the outbreak of war the price of rice rose steadily in all the districts, but the rise was moderate till the year 1941-42. The highest rise during that period was by 80% in the district of

TABLE LIX

*Madras State*

Rural price index numbers — December 1949

Base: Average prices from July 1935 to June 1936 — 100

| District | Centres | Rice prices | Food prices | Rural prices |
|---|---|---|---|---|
| Vizagapatam | Adivivaram | 381 | 417 | 411 |
| | Thattangi | 494 | 532 | 482 |
| E. Godavari W. Godavari Kistna Guntur | Alamuru | 338 | 426 | 417 |
| and Nellore | Madavaram | 358 | 492 | 462 |
| North Arcot | Pulliyur | 418 | 470 | 439 |
| and S. Arcot | Agaram | 431 | 405 | 389 |
| Trichinopoly and Tanjore | Thulayanatham | 338 | 495 | 467 |
| Madura Ramnad and | Eriodu | 423 | 447 | 421 |
| Tinnevelly | Gokilapuram | 383 | 423 | 435 |
| Coimbatore and Salem | Kinathukadavu | 406 | 435 | 420 |
| Malabar and | Koduvalli | 500 | 567 | 526 |
| | Guduvancheri | 388 | 456 | 444 |
| S. Kanara | Kunathur | 413 | 456 | 507 |
| The State — Median Average | | 406 | 456 | 439 |

(Taken from the Fort St. George Gazette. Median average worked out by the author).

Kistna, as revealed by the index figures, and the lowest by 26% in Madura. The ränge between these two is rather wide, and is accounted for by local conditions on which were superimposed the circumstances of the war period. In the pre-war year of 1938-39

price variations as between districts had a narrow range, the variation having been between Rs. 3-1-0 per imperial maund and Rs. 4-3-0. From this narrow range even by 1941-42, the district-war variation had broadened, and this has to be accounted for primarily by the war conditions of the period. One noticeable feature is that high and low prices in 1941-42 did not prevail, except in a few isolated cases, in the same districts as recorded high and low in 1938-39. Seasonal conditions may have been partly responsible for it, but on the whole it appears that the peculiar circumstances of the war period were the major factors.

In spite of the increase in prices, in no district did the price rise to the pre-depression level. The State median average was only Rs. 5-6-0 in 1941-42, whereas it was Rs. 7-4-0 in the quinquennium 1924-29.

2. In 1942-43 the rise in prices in all districts was phenomenal. In most of the districts the index figure exceeded 200, and in Chingleput, Ramnad and Tinnevelly it exceeded 250, reaching 273·2, 270·3 and 260·3 respectively. For the State as a whole it was 212·6. The level in every district was higher than the pre-depression level.

3. After 1942-43 the rise has been steady in every district. Declines are registered in all the districts in some one year or other, but subsequent to such declines, the earlier tendency to a rise is seen to have been re-established. In two districts, viz. Anantapur and Tanjore, there was a steady increase in price from 1942-43 to 1948-49. In Salem too upto 1946-47 that seems to have been the feature. From 1943-44 onward the median average of district prices was higher than the highest price reached during the last 25 years of the pre-war period, viz. Rs. 8-14-0.

4. Comparing the years 1938-39 and 1948-49, the rise has not been less than by 159% in any district. The highest index figure, 726·8, applies to Vizagapatam, and four out of the rest have index figures exceeding 500. Thus barring a few exceptions, all the districts recorded in 1948-49 prices four times what they were in the pre-war year, and almost double pre-depression prices. This low rise above pre-depression prices relatively to the rise of prices in other agricultural commodities, doubtless, accounts for the lack of increase in acreage or yield in rice.

As was noticed in the case of the year 1941-42, high and low prices in 1948-49 did not synchronize with the high and low of 1938-39. Delta regions as a rule had lower prices in 1948-49 than the drier regions of the State. The highest prices prevailed in

Vizagapatam, Cuddapah, Chittoor and Coimbatore, viz., Rs. 30-7-0, Rs. 24-7-0, Rs. 23-6-0 and Rs. 22-8-0 per imperial maund respectively, and the lowest price of Rs. 12-0-0 in Tanjore.

5. During the war period, the rise of price in Madras was about the lowest among the provinces of India. The index number for Madras for 1944-45, with 1938-39 as base, was only 240, while in Bengal, Bihar and Assam it was near 350, in the Central Provinces and the Punjab near 300. In the United Provinces it was 'of the same order as Bengal' and in Bombay, in the producing areas, midway between 240 and 350 and in the consuming areas, higher than 350.[1] Speaking of this period, the Famine Inquiry Commission say, "To sum up, the position broadly appears to be that in relation to pre-war prices, prices of rice in Madras are the lowest in India and those in Sind are very nearly as low. The level may be taken to be not less than 240 per cent and not more than 250 per cent of the pre-war price. The prices prevailing in Bengal are definitely high and are in the neighbourhood of 350 per cent of the pre-war price. The prices in Assam, Bihar and the United Provinces are approximately at the same level as in Bengal. The prices in the Central Provinces are intermediate between Bengal and Madras prices and roughly about 300 per cent of the pre-war level. Prices in the Punjab are intermediate between those in the Central Provinces and Bengal. Orissa prices are not much higher than in Madras, though in view of the relatively low level of prices before the war, the proportionate increase has been higher."

6. The rise in rice prices is seen to be lower than the rise in other agricultural commodities with the exception of cholam and jaggery. This is undoubtedly due to severe control imposed on rice and the sustained effort made under the Grow More Food Campaign to maintain, if not to increase, the acreage and the yield of rice. One effect of the control, as may be naturally expected, has been to make the Campaign itself ineffective on the positive side. The prices used for compiling the index numbers for rice are the statutorily controlled prices and not the black-market prices which were higher. But blackmarket prices operated only on insignificant portions of transactions, the bulk of the trade in rice taking place on the basis of controlled prices. In every district, effective procurement existed and the State had a monopoly of the wholesale trade in rice. So controlled prices were to all intents and purposes the prices at which the trade in general was conducted.

1. The Famine Inquiry Commission, Final Report, pp. 475 and 476.

TABLE LX

*Madras State*

Index numbers of average harvest prices of rice second sort

*Per Imperial Maund*

Base : 1938-39 = 100

| District | 1938–39 | 1939–40 | 1940–41 | 1941–42 | 1942–43 | 1943–44 | 1944–45 | 1945–46 | 1946–47 | 1947–48 | 1948–49 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Vizagapatam | 100 | 104·4 | 125·3 | 138·8 | 197 | 234·3 | 232·8 | 253·7 | 273·1 | 267·1 | 726·8 |
| E. Godavari | 100 | 116 | 150 | 157·1 | 228·5 | 258·9 | 255·3 | 260·7 | 260·7 | 264·1 | 475·0 |
| W. Godavari | 100 | 122·2 | 144·4 | 148·1 | 220·3 | 250 | 251·8 | 244·4 | 246·2 | 277·7 | 368·5 |
| Kistna | 100 | 141 | 146·4 | 180·3 | 221·4 | 266 | 242·8 | 250 | 257·1 | 258·9 | 394·6 |
| Guntur | 100 | 112·9 | 142·5 | 172·2 | 221·4 | 274 | 268·5 | 262·9 | 272·2 | 300 | 405·5 |
| Kurnool | 100* | 116·4 | 131·3 | 161·1 | 198·5 | 249·2 | 220·8 | 226·5 | 247·7 | 304·4 | 358·2 |
| Bellary | 100* | 119·4 | 125·9 | 132·4 | 180·5 | 212·9 | 209 | 211·6 | 227·2 | 331·1 | 351·9 |
| Anantapur | 100 | 118·6 | 128·8 | 144 | 206·7 | 264·4 | 276·2 | 281·3 | 303·3 | 367·7 | 449·1 |
| Cuddapah | 100* | 105·7 | 123·1 | 123·1 | 186·9 | 233·3 | 230·4 | 227·5 | 242 | 285·5 | 516·6 |
| Nellore | 100* | 95 | 95 | 120 | 172·5 | 196·2 | 173·7 | 203·7 | 202·5 | 280·0 | 286·2 |
| Chingleput | 100 | 133·9 | 126·7 | 148·2 | 273·2 | 246·4 | 285·7 | 300 | 308·9 | 310·7 | 478·5 |
| S. Arcot | 100 | 114·5 | 112·7 | 140 | 221·8 | 221·8 | 281·8 | 276·3 | 283·6 | 345·4 | 474·5 |
| Chittoor | 100 | 98·4 | 98·4 | 130·7 | 226·1 | 226·1 | 216·9 | 223 | 269·2 | 350·7 | 566·1 |
| N. Arcot | 100 | 108·4 | 125·4 | 132·2 | 228·8 | 189·8 | 223·7 | 272·8 | 284·7 | 386·4 | 410·1 |
| Salem | 100* | 87·5 | 92·5 | 103·7 | 167·5 | 180 | 183·7 | 193·7 | 193·7 | 220·0 | 310·0 |
| Coimbatore | 100* | 102·9 | 113·2 | 132·3 | 200 | 239·7 | 242·6 | 236·7 | 242·6 | 294·1 | 529·4 |
| Trichinopoly | 100 | 106·3 | 106·3 | 131·6 | 204·7 | 249·2 | 261·9 | 266·6 | 250·7 | 301·5 | 426·9 |
| Tanjore | 100 | 120·3 | 131·4 | 155·5 | 227·6 | 266·6 | 275·9 | 275·9 | 275·9 | 296·2 | 355·5 |
| Madura | 100 | 101·4 | 119·1 | 126·4 | 213·2 | 239·7 | 222 | 266·1 | 267·6 | 267·6 | 427·9 |
| Ramnad | 100 | 125·9 | 125·9 | 168·5 | 270·3 | 340·7 | 262·9 | 337·0 | 316·6 | 346·2 | 466·6 |
| Tinnevelly | 100 | 120·6 | 124·1 | 150 | 260·3 | 284·4 | 298·2 | 298·2 | 303·4 | 262·0 | 550·0 |
| Malabar | 100* | 103·4 | 103·4 | 146·5 | 232·7 | 286·2 | 281 | 263·7 | 265·5 | 329·3 | 413·7 |
| S. Kanara | 100 | 100 | 119·6 | 148·4 | 242·4 | 260·6 | 260·6 | 260·6 | 253 | 278·7 | 374·2 |
| The State † | 100 | 109·5 | 120·6 | 136·5 | 212·6 | 249·2 | 239·6 | 255·5 | 263·4 | 290·4 | 414·2 |

* Base 1937–38. No quotations available for 1938–39.

† Based on the median average.

*Agricultural Incomes*: The higher prices prevalent now for all agricultural produce have raised their value and correspondingly raised the gross income accruing to the agricultural community. The total value of agricultural produce produced during a given period, say a year, may be said to equate with the gross income of those participating in its production. The whole of that gross value is distributed among the various classes of the agricultural community, the landlords, the tenants, the peasant proprietors, the labourers, all getting their respective shares. For the community as a whole therefore, the gross value of produce is identical with its gross income. From this gross income certain deductions have to be made in order to discover the net income of the community. The deductions for the community as a whole will not be so numerous as will be the case with an individual for the obvious reason that some of the costs of some individuals are the incomes of other individuals of the community. An individual cultivator has to deduct his whole cost of production in which will enter rent, wages, interest, depreciation of implements, cost of maintaining cattle, etc. from the gross value of produce before he can compute his net income. But for the community, rent and wages will not figure as costs to be deducted, for in communal income they will figure as the incomes of landlords and labourers respectively. All payments made for services rendered by individuals will go to swell communal income, and such payments need not be deducted from gross income to arrive at the net income of the community.

According to this method an attempt is made in the following pages to make a computation of gross and net incomes of the agricultural community for the various districts of the State. The method followed is almost identical with the one adopted by Dr. V. K. R. V. Rao in his computation of the agricultural income of British India,[2] but to bring this analysis into line with the general purpose of the book, I have introduced a few variations. Dr. Rao was calculating the income of a particular year and so adopted the production and price figures pertaining to that year. My idea has been to give an indication of the income which the agricultural community can expect over a period of time if current prices are stabilized, and so I have taken the average production figures for the years 1940-47 and the price figures of 1947-48. Taking good and bad years together, what the agriculturists of the State can on an average produce in a year will be roughly indicated by the average figures for 1940-47; and

2. V. K. R. V. Rao, The National Income of British India, 1931-32.

their value at the current level of high prices can be discovered if the prices of 1947-48 are used to evaluate them. Price quotations for all the districts for all the commodities for the year 1947-48 have not been available, and so I have adopted in those few cases where there has been a lack of data the previous year's prices or the price quotation of the neighbouring districts, whichever was found most suitable. Since the price quotations relate in most cases to wholesale prices in the producing centres and in some cases to retail prices, deductions have been made in respect of marketing costs before arriving at producers' prices. These margins were allowed for on the basis of the percentage figures given in the marketing surveys relating to various crops. The yield figures given in the Season and Crop Reports have been used for calculating average production, and where yield figures were not available, rough estimates of yield have been made. These estimates were based on the known yields per acre of similar crops or on data made available in some of the intensive village studies made in the State. It is not possible to make detailed reference to all those bases. In the computation of gross value of produce I have included the value of straw too, unlike Dr. V. K. R. V. Rao, and included that value in the deduction made for the discovery of net income. This has been done in order to give as accurate an estimate of gross income as possible. On the same principle the farm yard manure produced on the farm and used there, the green manure raised and ploughed into the soil and certain other items should have been included, but for lack of data, it has not been possible to do it.

In the case of cereals and pulses and certain other crops the production figures relate to the husked or processed produce, while the value figures are for the unhusked or unprocessed produce yielding the given quantities of husked produce. This differential treatment was rendered necessary by the fact that price quotations are for the prepared produce, while the producers sell produce in their unprepared state. Value received for unhusked produce will be, apart from marketing costs, only a percentage of the wholesale prices quoted.

From gross income or gross value of produce deductions made for discovering net income are for wastage, seed, upkeep of work and milch animals, repair and replacement of implements and interest on debt. For items 1, 2 and 4, the same percentages or amounts as were allowed by V. K. R. V. Rao were allowed, while for the maintenance of animals, the whole value of straw produced in the State and the value of concentrated feeds fed to cattle were

allowed. For interest on debt, the statutory rate of 6¼% was adopted on the subsisting debt of 1945, based on the estimate made by the Economist who conducted the enquiry into rural indebtedness in that year.

From the gross income and net income as calculated, gross income and net income per head of the rural population, per head of the occupied population and per acre of net area sown have been deduced. These latter figures throw a clearer light on the relative opulence of the different districts and help to indicate where and in what direction State policy should foster development.

In Table LXI, a consolidated statement, under main heads, of the cultivators' value of agricultural crops is given and in Table LXII the gross and net agricultural incomes for each district and in Table LXIII incomes per head and per acre are given.

From Table LXI it may be gathered that the gross value of the agricultural produce of the State works out roughly to Rs. 587 crores. This sum represents the gross income of the agricultural community numbering about 44 million (estimated population for 1948). Distributed evenly among them it yields a gross income per head of the rural population of Rs. 133 per year or Rs. 11-1-0 per month. Of this population of 44 million, only about 13·3 million are actively occupied in cultivation and animal raising. So per head of the occupied population gross income is Rs. 441 per year or Rs. 36-8-0 per month.

The district-war distribution of this gross income is given in the last column of Table LXI. The highest share goes to Malabar which has the largest rural population among the districts, but neither the largest land area nor the largest net area sown, nor the highest occupied population. The high gross income of this district is primarily due to her cocoanut and fruit culture which together yield about Rs. 61 crores of her total of Rs. 79 crores. Cocoanut cultivation alone, at the high prices prevalent now, yields about Rs. 40 crores, Rs. 22 crores through nut production and nearly Rs. 18 crores through leaves. In rice culture too she comes very near some of the northern delta districts. She has the highest gross income and net income per head of the occupied population and, barring the Nilgiris, the highest net income per head of the rural population — Rs. 172 per year. Her gross and net income per acre also is highest in the State.

Excluding the Nilgiris which in many respects occupies a special position, the lowest gross income is seen in the district of Ramnad,

TABLE LXI

Cultivators' Value of Agricultural Crops

| District | Value of cereals and pulses | Value of other food crops | Value of oilseeds | Value of other non-food crops | Value of milk, ghee, etc. | Value of Straw and cocoanut leaves | Total |
|---|---|---|---|---|---|---|---|
| | Rs. | Rs. | Rs. | Rs. | Rs. | Rs. | Rs. |
| Vizagapatam .. | 104941049 | 97243774 | 60752728 | 10915660 | 35287094 | 43874000 | 353014305 |
| E. Godavari .. | 89169627 | 88324864 | 20663834 | 11335733 | 33643675 | 52106000 | 294243733 |
| W. Godavari .. | 88506929 | 39833822 | 12916864 | 9592665 | 26250310 | 28970000 | 206070590 |
| Kistna .. | 87889873 | 28446000 | 36454630 | 9806877 | 35186963 | 26645000 | 224429343 |
| Guntur .. | 86805034 | 48614604 | 43761801 | 56078953 | 48659500 | 41408000 | 325327992 |
| Kurnool .. | 41401241 | 32925361 | 110406338 | 7128501 | 20471530 | 35160000 | 247492971 |
| Bellary .. | 22956966 | 27247679 | 44330055 | 6322177 | 23472537 | 41893000 | 166222414 |
| Anantapur .. | 36822301 | 33634920 | 74541273 | 2454603 | 15841668 | 32434000 | 195728765 |
| Cuddapah .. | 30517456 | 43069738 | 25761039 | 2521608 | 18310927 | 20654000 | 140834768 |
| Nellore .. | 109912460 | 17738020 | 3182904 | 3363014 | 36521724 | 34005000 | 204723122 |
| Chingleput .. | 74087870 | 18559467 | 92168816 | 134128 | 20595264 | 25819000 | 231364545 |
| S. Arcot .. | 96172367 | 45018089 | 67215624 | 1850093 | 25011625 | 31123000 | 266390798 |
| Chittoor .. | 56849345 | 49559290 | 24202298 | 433571 | 20780188 | 17530000 | 169354692 |
| N. Arcot .. | 77109080 | 40084825 | 66639551 | 1164522 | 20162873 | 30576000 | 235736851 |
| Salem .. | 60659091 | 44801510 | 40802797 | 10229972 | 28087839 | 40981000 | 225562209 |
| Coimbatore .. | 67282474 | 36987593 | 57481466 | 14571126 | 30248442 | 39586000 | 246157101 |
| Trichinopoly .. | 72983849 | 65125851 | 46457190 | 4673625 | 19312742 | 33651000 | 242204257 |
| Tanjore .. | 149150610 | 26503321 | 26230908 | 1144490 | 25510182 | 57877000 | 286416511 |
| Madura .. | 79050843 | 53596630 | 41065050 | 20632146 | 12755091 | 29859000 | 236958760 |
| Ramnad .. | 57995299 | 28220815 | 22786540 | 17788965 | 12546564 | 25963000 | 165301183 |
| Tinnevelly .. | 60560533 | 53526188 | 7080378 | 23746018 | 14471705 | 23226000 | 182610822 |
| Malabar .. | 80068015 | 236212886 | 230572786 | 20487605 | 21088845 | 203365000 | 791795137 |
| S. Kanara .. | 74607583 | 39327016 | 17076411 | 4700718 | 14089852 | 42648000 | 188449580 |
| The Nilgiris .. | 1051846 | 21591136 | — | 10568344 | 1977206 | — | 35188532 |
| The State .. | 1706551741 | 1217289419 | 1179551281 | 250644001 | 559284346 | 959353000 | 5867673788 |

TABLE LXII

Gross and net agricultural income with deductions

| District | | Gross agricultural income | Wastage | Seed | Interest on debt | Upkeep of work and milch animals | Repair and replacement of implements | Total deduction | Net agricultural income |
|---|---|---|---|---|---|---|---|---|---|
| | | Rs. | Rs. | Rs. | Rs. | Rs. | Rs. | Rs. | Rs. |
| Vizagapatam | .. | 353014000 | 10590210 | 16431240 | 9072900 | 113735713 | 334445 | 150164508 | 202849492 |
| E. Godavari | .. | 294244000 | 8857320 | 12569700 | 4737900 | 78767402 | 1240237 | 106172559 | 188071441 |
| W. Godavari | .. | 206071000 | 6180630 | 9051060 | 3088050 | 65267742 | 1117231 | 84704713 | 123366287 |
| Kistna | .. | 224429000 | 6732690 | 9755880 | 3345600 | 68456324 | 652883 | 88943377 | 135485623 |
| Guntur | .. | 325328000 | 9759810 | 14115660 | 5299850 | 97188837 | 790041 | 127154198 | 198173802 |
| Kurnool | .. | 247493000 | 7274790 | 11571660 | 3911700 | 63842473 | 573374 | 87173997 | 155319003 |
| Bellary | .. | 166222000 | 4986660 | 6051420 | 2598450 | 67112780 | 539554 | 81288864 | 84933136 |
| Anantapur | .. | 195729000 | 5871870 | 6847180 | 2588250 | 64356117 | 782101 | 80445518 | 115283482 |
| Cuddapah | .. | 140835000 | 5125150 | 6112200 | 1982250 | 46519272 | 732895 | 60471767 | 80363233 |
| Nellore | .. | 204723000 | 6141690 | 8051760 | 2794800 | 82572658 | 900080 | 100460988 | 104262012 |
| Chingleput | .. | 231365000 | 6940950 | 11097000 | 4082550 | 63254660 | 1042676 | 86417836 | 144947164 |
| S. Arcot | .. | 266391000 | 7991730 | 15983460 | 6196500 | 90465190 | 1792593 | 122429473 | 143961527 |
| Chittoor | .. | 169355000 | 5080650 | 7862640 | 4230450 | 60160656 | 1109550 | 78443946 | 90911054 |
| N. Arcot | .. | 235737000 | 7072110 | 11099940 | 5982300 | 84141924 | 1606360 | 109902634 | 125834366 |
| Salem | .. | 225562000 | 6766860 | 8845740 | 7168050 | 110064594 | 2058449 | 134903693 | 90658307 |
| Coimbatore | .. | 246157000 | 7384710 | 10579320 | 6538200 | 92092107 | 1228654 | 117822991 | 128334009 |
| Trichinopoly | .. | 242204000 | 7266120 | 11354460 | 5094900 | 81759140 | 1695584 | 107170204 | 135033796 |
| Tanjore | .. | 286417000 | 8592510 | 12181740 | 5732400 | 97647952 | 1647880 | 125802482 | 160614518 |
| Madura | .. | 236959000 | 7108770 | 11660700 | 4995450 | 71571114 | 1336551 | 96672585 | 140286415 |
| Ramnad | .. | 165301000 | 4959030 | 7607520 | 4080000 | 58161862 | 1103245 | 75911657 | 89389343 |
| Tinnevelly | .. | 182611000 | 5478330 | 8694780 | 4544100 | 59418249 | 715026 | 78850485 | 103760515 |
| Malabar | .. | 791795000 | 23753850 | 34040520 | 9636450 | 71428636 | 1188115 | 140047571 | 651747429 |
| S. Kanara | .. | 188450000 | 5773500 | 8142720 | 3745950 | 55432532 | 1812591 | 74907293 | 113542707 |
| The Nilgiris | .. | 35189000 | 1055670 | 1992660 | 420750 | 2520620 | 15415 | 6005115 | 29183885 |
| The State | .. | 5867674000 | 176745610 | 261700960 | 111867700 | 1751038454 | 26016130 | 2327368854 | 3540305146 |

TABLE LXIII

*Madras State*

Income per head and per acre

| District | * Population occupied in cultivation | * Rural population | * Gross agricultural income | Gross income per head of occupied population | Gross income per head of rural population | * Net agricultural income | Net income per head of occupied population | Net income per head of rural population | Gross income per acre sown | Net income per acre sown |
|---|---|---|---|---|---|---|---|---|---|---|
| | 1948 | 1948 | Rs. | Rs. | Rs. | Rs. | Rs. | Rs. | Rs. | Rs. |
| Vizagapatam .. | 1167000 | 3558000 | 353014000 | 302 | 99 | 202849000 | 174 | 57 | 231 | 132 |
| E. Godavari .. | 514000 | 1858000 | 294244000 | 572 | 158 | 188071000 | 365 | 101 | 288 | 184 |
| W. Godavari .. | 469000 | 1211000 | 206071000 | 439 | 170 | 123366000 | 263 | 101 | 234 | 138 |
| Kistna .. | 451000 | 1312000 | 224429000 | 498 | 171 | 135490000 | 300 | 103 | 192 | 116 |
| Guntur .. | 729000 | 2047000 | 325328000 | 446 | 159 | 198174000 | 272 | 97 | 155 | 95 |
| Kurnool .. | 366000 | 1015000 | 242493000 | 662 | 239 | 155319000 | 424 | 153 | 121 | 77 |
| Bellary .. | 358000 | 881000 | 166222000 | 464 | 189 | 84933000 | 237 | 96 | 71 | 37 |
| Anantapur .. | 425000 | 1096000 | 195729000 | 461 | 179 | 115283000 | 270 | 105 | 87 | 52 |
| Cuddapah .. | 318000 | 1019000 | 140835000 | 442 | 138 | 80363000 | 252 | 78 | 139 | 79 |
| Nellore .. | 537000 | 1534000 | 204723000 | 381 | 133 | 104262000 | 194 | 68 | 161 | 82 |
| Chingleput .. | 405000 | 1601000 | 231365000 | 571 | 145 | 144947000 | 358 | 91 | 335 | 210 |
| S. Arcot .. | 719000 | 2430000 | 266391000 | 370 | 110 | 143962000 | 200 | 59 | 198 | 107 |
| Chittoor .. | 567000 | 1659000 | 169355000 | 299 | 102 | 90911000 | 160 | 55 | 226 | 121 |
| N. Arcot .. | 692000 | 2346000 | 235737000 | 341 | 101 | 125834000 | 182 | 54 | 210 | 112 |
| Salem .. | 919000 | 2811000 | 225562000 | 245 | 80 | 90658000 | 98 | 32 | 135 | 54 |
| Coimbatore .. | 718000 | 2564000 | 246157000 | 343 | 96 | 128334000 | 179 | 50 | 141 | 73 |
| Trichinopoly .. | 741000 | 1998000 | 242204000 | 327 | 121 | 135034000 | 182 | 78 | 186 | 104 |
| Tanjore .. | 614000 | 2248000 | 286417000 | 466 | 127 | 160615000 | 262 | 71 | 209 | 117 |
| Madura .. | 556000 | 1959000 | 236959000 | 426 | 121 | 140286000 | 252 | 72 | 194 | 115 |
| Ramnad .. | 442000 | 1600000 | 165301000 | 374 | 103 | 89389000 | 202 | 56 | 145 | 78 |
| Tinnevelly .. | 583000 | 1782000 | 182611000 | 313 | 102 | 103761000 | 178 | 58 | 153 | 87 |
| Malabar .. | 514000 | 3779000 | 791795000 | 1540 | 210 | 651747000 | 1268 | 172 | 514 | 423 |
| S. Kanara .. | 454000 | 1469000 | 188450000 | 415 | 128 | 113543000 | 250 | 77 | 336 | 203 |
| The Nilgiris .. | 26000 | 165000 | 35189000 | 1353 | 213 | 29184000 | 1122 | 177 | 351 | 291 |
| The State .. | 13284000 | 43950000 | 5867674000 | 441 | 133 | 3540305000 | 266 | 80 | 187 | 112 |

* Figures corrected to the nearest thousand.

and very near to it stand Bellary and Chittoor, both of which are equally dry. They have gross incomes of Rs. 16·5 crores, Rs. 16·6 crores and Rs. 16·9 crores respectively.

Though lowest in the scale on the basis of this criterion, they are seen to be better off than certain other districts on the basis of gross or net income per head of the rural population. Bellary has the lowest rural population in the State, and so her gross income and net income per head work out higher than most other districts. But since it has the largest area sown in the State, income per acre is the lowest in the State — a clear case of product per man being high in spite of low product per acre. In the case of the other two districts, areas sown are larger and the rural populations are higher. Even so from the point of view of income per head, they are seen to be better off than Salem, Coimbatore or S. Arcot.

The lowest gross income per head of the rural population is seen in Salem. Its net income per head also is the lowest in the State — Rs. 32 per head per year. This is rather surprising when the attendent circumstances are taken into account. It is the fifth largest district in the State, has the third largest rural population, the second largest occupied population, and in the net area sown stands sixth in the State. For its wealth it depends on a variety of crops, in none of which it excels, drawing however the larger part of its income from the cultivation of food crops, including milk and milk products. This last factor together with the other factor that, outside of Rayalaseema and the West Coast, it has the lowest acreage in the State under irrigation, probably accounts for her excessive poverty.

One other district which is only slightly better off than Salem is Coimbatore. It has greater irrigational facilities, having half as much more area under irrigation than Salem, grows more of oilseeds and other non-food crops than the latter, has a comparable net area sown, and yet yields only net income per head of Rs. 50. The reason for this has to be sought in the large rural population it has and in the circumstance that it draws nearly half of its total income from food crops. There is the additional reason that she specializes in cotton cultivation where the rise of prices has not been comparable.

Malabar and Kurnool appear to be two of the richest districts. The case of Malabar is easily explained, but Kurnool's case is surprising. Being in the dry area of Rayalaseema with no irrigational facilities worth the name, it is indeed startling that it should have

a net income per head of the rural population of Rs. 153. The real explanation lies in the fact that it has a very large acreage under cultivation, has a fairly low rural population and devotes the greater part of its acreage to the cultivation of groundnut which has phenomenally risen in price. This is the case with the other Ceded Districts too which also have fairly high incomes per head.

Among the other districts, the Northern Delta districts have higher incomes per head than the Southern Deltas, primarily due to the thinner rural populations there and the higher percentage of the occupied population. Cultivation is as varied in the south as in the north, but there appears to be a greater predominence of animal raising in the north than in the south. The total agricultural wealth produced in the Tamil districts however compares favourably with the total wealth of the Telugu districts, including Rayalaseema, Rs. 234 crores for the ten Tamil districts, and Rs. 252 crores for the eleven Telugu districts, but the occupied population is half a million more in the Tamil area and the acreage sown about four million less. In the south undoubtedly there is greater intensification of cultivation, labour acting as a substitute for land.

The range between the highest and the lowest net income per head is very wide indeed : the figures being Rs. 172 in Malabar and Rs. 32 in Salem. The Nilgiris has Rs. 177, but the economic circumstances there are altogether special. Even a wider range is seen between the highest and the lowest net income per acre sown. While in Malabar it is as high as Rs. 423, in Bellary it is as low as Rs. 37. This would indicate that differences in the wealth production of districts are more to be accounted for by the differences in physical circumstances than by the human factor. The net income per head of the rural population for the State as a whole is Rs. 80, and while all the Telugu districts with the exception of Vizagapatam, Nellore, Cudappah and Chittoor, have figures exceeding this, the only Tamil district which exceeds it is Chingleput. All the others have figures below the State average. So also, there are more districts in the Telugu area having net income per acre exceeding the State average than in the Tamil area. So the conclusion may be drawn that as far as agricultural income is concerned, the Tamil area is slightly poorer. S. Kanara on the West Coast is on the average mark, while Malabar is definitely affluent.

For the State as a whole food crops (including milk and milk products, but excluding groundnut and cocoanut) contribute the largest share of wealth. Out of a total income of Rs. 587 crores, nearly Rs. 293 crores or 50% are drawn from the cultivation of food crops. Of the food crops, rice is the most predominant, contribut-

ing as much as Rs. 166·7 crores or 27% of the total. In nineteen out of the 24 districts too, more than 50% of gross income is derived from food crops. The districts which form the exception are Guntur in the Circars, Kurnool, Bellary and Anantapur in the Ceded Districts and Malabar on the West Coast. In sixteen districts rice cultivation yields more than a fifth of the gross income and in ten of them, more than a fourth. In Tanjore alone is more than half the income drawn from rice. In the Ceded Districts, in Guntur, in Salem and Coimbatore and in Malabar, rice cultivation from the income point of view is not predominant.

In Malabar, Kurnool, Bellary, Anantapur, Chingleput, South Arcot, North Arcot and Coimbatore, more than a fourth of the gross income is drawn from oilseeds, and of these Malabar, Kurnool, Anantapur and Chingleput are specially important. Only Coimbatore, Madura, Ramnad and Tinnevelly get appreciable incomes from cotton, and only in the case of Coimbatore does this income form 20% or more of total income.

* * *

This brings the analysis of the agricultural organization of the State, attempted in the foregoing chapters to a close. The main aim of the analysis has been to discover the efficiency of the organization, as it exists to-day, in all its aspects, physical, material, human and institutional, and to see to what extent it discharges its primary function of maximizing production. The true test of efficiency is the result obtained, and by that test, there can be no doubt, the existing organization stands condemned. The aggregate income of the agricultural community taken along with the resources employed in agricultural activity is the right criterion to be applied to discover the efficacy of the system. When this criterion is applied, the situation in the State, clearly and simply, appears to be one of low production with the employment of a great quantity of resources. An occupied population of nearly 13 million working on a land area of 31·66 million acres succeeds in securing an income of only Rs. 36-8-0 per month. This is the simple truth, and it is this position more than anything else which has to be directly assailed.

The solution for this problem, in the author's view, lies not so much in the direction of securing for the agriculturists a larger slice of the national income, through raising the prices of agricultural commodities, as in the direction of increasing productivity and thereby increasing the national dividend itself. For this reason

all the emphasis of the study has been placed on production and the analysis has been carried out from that point of view.

There is no dearth of the 'permanent resources' needed for wealth production in the State, such as, land or labour, but what is lacking is effective organization of productive activity. With the best of wills and sustained effort in the direction of development, little has been accomplished so far. Physical and material handicaps and institutional and temperamental rigidities have been many, making progress slow and fitful, but on top of it all there has been a lack of a comprehensive view of the problem or an over-all co-ordinated programme of re-organization. The fundamental basis of the productive structure remains primitive and unaltered, and though much has been done to improve the organizational edifice sectionally and to increase the facilities available for the conduct of progressive agriculture, the result has been incommensurate with the effort or money expended. What is needed, therefore, is a plan *of reconstruction in which the agricultural economy will be con*ceived as a whole, with its inter-relations with the general economy of the land, and all the programmes of development or re-organization so harmonized and co-ordinated as to result in an all-round improvement and expansion. A big step forward and an over-all effort on a planned basis is the least that the situation demands. And it is the author's hope that in the formulation of such a plan, the factual analysis attempted in this book will be of help.

# APPENDICES

## Appendix I

### Area irrigated in each district from various sources of irrigation — 1946-47 (000 acres)

| District | Government canals | Private channels | Tanks | Wells having independent ayacuts | Wells supplementing recognized sources of irrigation | Other sources | Total | Percentage of irrigated area to net area sown | Percentage of area irrigated by wells having independent ayacuts to net area sown |
|---|---|---|---|---|---|---|---|---|---|
| | acres | acres | acres | acres | acres | acres | acres | percent | percent |
| Vizagapatam .. | 150 | 118 | 488 | 83 | 36 | 56 | 895 | 60·6 | 9·3 |
| E. Godavari .. | 520 | — | 87 | — | — | 40 | 647 | 65·3 | — |
| W. Godavari .. | 506 | — | 95 | 10 | — | 8 | 619 | 82·9 | 1·6 |
| Kistna .. | 575 | 1 | 56 | 7 | — | 43 | 682 | 57·6 | 1·0 |
| Guntur .. | 407 | — | 19 | 14 | 3 | 6 | 446 | 21·2 | 3·2 |
| Kurnool .. | 36 | — | 52 | 10 | — | 4 | 111 | 5·6 | 17·5 |
| Bellary .. | 22 | — | 16 | 12 | — | 10 | 60 | 2·5 | 20·8 |
| Anantapur .. | 30 | 1 | 110 | 63 | 2 | 5 | 218 | 10·9 | 28·9 |
| Cuddapah .. | 58 | 1 | 68 | 81 | 3 | 20 | 227 | 22·7 | 35·5 |
| Nellore .. | 157 | — | 284 | 164 | 1 | 11 | 617 | 47·8 | 26·6 |
| Chingleput .. | 13 | — | 498 | 15 | 35 | 10 | 536 | 78·5 | 2·8 |
| S. Arcot .. | 183 | — | 202 | 19 | 69 | 16 | 511 | 38·0 | 3·7 |
| Chittoor .. | 28 | 23 | 203 | 84 | 3 | 11 | 349 | 45·7 | 24·1 |
| N. Arcot .. | 56 | 1 | 284 | 122 | 52 | 10 | 473 | 41·6 | 25·7 |
| Salem .. | 29 | — | 74 | 118 | 62 | 8 | 229 | 13·9 | 51·4 |
| Coimbatore .. | 85 | 2 | 23 | 376 | — | 36 | 523 | 29·7 | 72·0 |
| Trichinopoly .. | 139 | — | 60 | 92 | — | 15 | 306 | 23·4 | 29·9 |
| Tanjore .. | 1085 | — | 71 | 2 | 10 | 1 | 1157 | 83·9 | 0·2 |
| Madura .. | 174 | — | 114 | 135 | — | 1 | 424 | 35·3 | 31·9 |
| Ramnad .. | 1 | — | 347 | 105 | 1 | 29 | 482 | 43·1 | 21·8 |
| Tinnevelly .. | 47 | 2 | 205 | 95 | 1 | 3 | 351 | 29·2 | 27·0 |
| The State .. | 4309 | 150 | 3446 | 1617 | 281 | 342 | 9863 | 31·8 | 16·4 |

APPENDIX

Area of Crops Irrigated —

| District | | Paddy | | Cholam | | Cumbu | | Ragi | |
|---|---|---|---|---|---|---|---|---|---|
| | | 1941-42 | 1946-47 | 1941-42 | 1946-47 | 1941-42 | 1946-47 | 1941-42 | 1946-47 |
| Vizagapatam | .. | 620 | 726 | ·3 | — | 1 | ·2 | 146 | 99 |
| E. Godavari | .. | 580 | 586 | — | — | — | — | 1 | ·1 |
| W. Godavari | .. | 590 | 715 | ·2 | ·1 | — | — | ·4 | 1 |
| Kistna | .. | 580 | 649 | — | — | — | — | 1 | — |
| Guntur | .. | 390 | 401 | 3 | 9 | 3 | 1 | 8 | 7 |
| Kurnool | .. | 50 | 77 | 3 | 1 | 12 | 11 | 20 | 16 |
| Bellary | .. | 30 | 29 | 3 | 5 | ·1 | ·2 | 7 | 7 |
| Anantapur | .. | 120 | 138 | 17 | 18 | ·1 | ·3 | 77 | 76 |
| Cuddapah | .. | 110 | 138 | 6 | 9 | 26 | 27 | 64 | 45 |
| Nellore | .. | 410 | 447 | 3 | 12 | 63 | 82 | 73 | 81 |
| Chingleput | .. | 570 | 550 | ·2 | ·1 | 2 | 4 | 60 | 57 |
| S. Arcot | .. | 500 | 536 | 2 | 1 | 8 | 9 | 65 | 58 |
| Chittoor | .. | 190 | 226 | 15 | 12 | 16 | 20 | 69 | 61 |
| N. Arcot | .. | 470 | 561 | 18 | 15 | 11 | 15 | 87 | 81 |
| Salem | .. | 200 | 235 | 40 | 44 | 42 | 21 | 32 | 40 |
| Coimbatore | .. | 110 | 138 | 112 | 126 | 60 | 59 | 103 | 96 |
| Trichinopoly | .. | 310 | 317 | 34 | 37 | 36 | 20 | 30 | 24 |
| Tanjore | .. | 1190 | 1251 | — | — | 1 | 1 | 12 | 11 |
| Madura | .. | 340 | 354 | 66 | 106 | 12 | 12 | 47 | 41 |
| Ramnad | .. | 250 | 376 | 15 | 25 | 6 | 9 | 54 | 41 |
| Tinnevelly | .. | 360 | 381 | 56 | 53 | 2 | 2 | 29 | 26 |
| The State | .. | 7990 | 8831 | 394 | 473 | 302 | 311 | 982 | 876 |

II

Madras State — 1941-42 and 1946-47 (000 acres)

| Sugarcane | | Cotton | | Gingelly | | Groundnut | | Castor | |
|---|---|---|---|---|---|---|---|---|---|
| 1941-42 | 1946-47 | 1941-42 | 1946-47 | 1941-42 | 1946-47 | 1941-42 | 1946-47 | 1941-42 | 1946-47 |
| 28 | 29 | ·3 | — | 46 | 11 | 1 | 20 | — | — |
| 8 | 13 | — | — | 12 | 28 | — | — | — | — |
| 3 | 7 | — | — | 16 | 3 | — | 1 | — | — |
| 2 | 4 | — | — | — | — | — | 1 | — | — |
| ·1 | 3 | — | — | — | — | — | — | — | — |
| ·4 | 1 | 1 | — | — | ·2 | 4 | 2 | — | — |
| 9 | 10 | 2 | ·4 | — | — | ·2 | ·4 | — | — |
| 3 | 7 | ·4 | ·2 | — | — | ·2 | 1 | — | — |
| ·3 | 1 | 3 | ·2 | 3 | 3 | 2 | 13 | — | 1 |
| — | — | — | — | 1 | 2 | ·2 | ·1 | — | — |
| ·2 | ·3 | ·1 | — | 2 | 5 | 2 | 14 | — | — |
| 12 | 24 | 3 | ·3 | 3 | 5 | 42 | 32 | — | — |
| 8 | 19 | ·3 | — | 2 | 3 | 7 | 6 | — | — |
| 8 | 10 | ·3 | — | 2 | 2 | 5 | 2 | — | — |
| 7 | 10 | 29 | 11 | 2 | 1 | 2 | 2 | 1 | 1 |
| 8 | 15 | 195 | 138 | 3 | 1 | 2 | 3 | ·2 | 1 |
| 5 | 17 | 16 | 6 | 3 | 3 | 11 | 21 | ·1 | — |
| 1 | 2 | — | — | 1 | 1 | 6 | 6 | — | — |
| 2 | 9 | 41 | 21 | 2 | 3 | 9 | 19 | ·4 | — |
| ·4 | 2 | 20 | 21 | 2 | 3 | 1 | 5 | ·1 | ·3 |
| ·1 | ·3 | 10 | 7 | 1 | 2 | ·1 | ·3 | ·4 | ·1 |
| 103 | 191 | 321 | 205 | 101 | 86 | 96 | 139 | 3 | 4 |

APPENDIX

*Madras*

Statistics relating

| District | | Area in sq. miles | Area under cultivation (million acres) | Total length of all roads | Motorable roads | Railways | Navigable canals |
|---|---|---|---|---|---|---|---|
| | | | 1944-45 | miles | miles | miles | miles |
| Vizagapatam | .. | 17186 | 1·48 | 1136 | 900 | 282 | — |
| E. Godavari | .. | 6257 | 1·04 | 1552 | 860 | 108 | 559 |
| W. Godavari | .. | 2361 | ·87 | 882 | 492 | 122 | 218 |
| Kistna | .. | 3547 | 1·18 | 959 | 513 | 144 | 226 |
| Guntur | .. | 5757 | 2·14 | 1134 | 825 | 297 | 174 |
| Kurnool | .. | 7581 | 2·01 | 1036 | 741 | 207 | 75 |
| Bellary | .. | *5713* | *2·31* | *959* | *487* | *226* | — |
| Anantapur | .. | 6741 | 2·02 | 1145 | 1003 | 262 | — |
| Cuddapah | .. | 5919 | ·98 | 939 | 884 | 125 | — |
| Nellore | .. | 7948 | 1·29 | 1239 | 1201 | 196 | 132 |
| Chingleput | .. | 3091 | ·69 | 1281 | 877 | 153 | 98 |
| S. Arcot | .. | 4208 | 1·32 | 1770 | 952 | 234 | — |
| Chittoor | .. | 5901 | ·76 | 1458 | 1316 | 238 | — |
| N. Arcot | .. | 4648 | 1·11 | 1682 | 1551 | 228 | — |
| Salem | .. | 7058 | 1·70 | 2191 | 1166 | 258 | — |
| Coimbatore | .. | 7085 | 1·82 | 2006 | 1317 | 151 | — |
| Trichinopoly | .. | *4314* | *1·30* | *1263* | *937* | *185* | — |
| Tanjore | .. | 3742 | 1·39 | 2657 | 1087 | 295 | 35 |
| Madura | .. | 4912 | 1·30 | 1379 | 1310 | 185 | — |
| Ramnad | .. | 4819 | 1·32 | 806 | 710 | 220 | — |
| Tinnevelly | .. | 4315 | 1·23 | 1136 | 993 | 214 | — |
| Malabar | .. | 5794 | 1·53 | 1792 | 1574 | 214 | 95 |
| S. Kanara | .. | 4021 | ·58 | 1467 | 896 | 60 | 4 |
| The Nilgiris | .. | 982 | ·11 | 758 | 409 | 21 | — |

III

*State*

to Transport (Taken from A. Vipen's Report, 1935)

| Metalled roads | Important marketing roads | District Board—Metalled roads | District Board—other roads | District Board—Roads total | Existing Government grant | Suggested Additional Government grant |
|---|---|---|---|---|---|---|
| miles | miles | miles | miles | miles | Rs. | Rs. |
| 897 | 527 | 370 | 239 | 609 | 167230 | 96270 |
| 860 | 325 | 535 | 692 | 1227 | 129680 | 65320 |
| 492 | 302 | 190 | 390 | 580 | 127003 | 54197 |
| 454 | 370 | 84 | 505 | 589 | 164580 | 57420 |
| 825 | 315 | 510 | 309 | 819 | 164580 | 24420 |
| 741 | 404 | 337 | 295 | 632 | 143127 | 58873 |
| 487 | 294 | 193 | 472 | 665 | 97680 | 49320 |
| 839 | 314 | 525 | 306 | 831 | 150563 | 6437 |
| 677 | 315 | 362 | 262 | 624 | 83450 | 74050 |
| 1142 | 436 | 706 | 97 | 803 | 156210 | 61750 |
| 772 | 348 | 424 | 509 | 933 | 148020 | 43380 |
| 641 | 345 | 296 | 1129 | 1425 | 156500 | 16000 |
| 1153 | 327 | 826 | 305 | 1131 | 138830 | 24670 |
| 1228 | 369 | 859 | 454 | 1313 | 151300 | 33200 |
| 1166 | 412 | 754 | 1025 | 1779 | 132250 | 72750 |
| 1317 | 675 | 642 | 689 | 1331 | 193690 | 143810 |
| 690 | 393 | 297 | 573 | 870 | 152802 | 43698 |
| 628 | 515 | 113 | 2029 | 2142 | 110350 | 147150 |
| 875 | 363 | 512 | 504 | 1016 | 101720 | 79780 |
| 623 | 262 | 361 | 183 | 544 | 87872 | 43128 |
| 763 | 314 | 449 | 373 | 822 | 103726 | 53274 |
| 1366 | 480 | 886 | 426 | 1312 | 214688 | 73312 |
| 698 | 390 | 308 | 769 | 1077 | 138954 | 56046 |
| 385 | 210 | 175 | 373 | 548 | 55160 | 49840 |

APPENDIX

*Madras*

Occupational Distribution of

Labouring Population in

| District | | Total occupied | Total labouring full-time and part-time | Percentage of (2) to (1) | Full-time labourers | Percentage of (4) to (1) | Part-time labourers |
|---|---|---|---|---|---|---|---|
| | | (1) | (2) | (3) | (4) | (5) | (6) |
| Vizagapatam | .. | 1093846 | 968698 | 89 | 929215 | 85·3 | 39483 |
| E. Godavari | .. | 467138 | 438023 | 93·6 | 419157 | 90 | 18866 |
| W. Godavari | .. | 410829 | 392132 | 95·1 | 372300 | 90·2 | 19832 |
| Kistna | .. | 370155 | 350624 | 94·6 | 328057 | 90 | 22567 |
| Guntur | .. | 626795 | 585086 | 93·6 | 542369 | 85·7 | 42717 |
| Nellore | .. | 477595 | 456665 | 96 | 434547 | 90 | 22118 |
| Cuddapah | .. | 269872 | 260461 | 96·3 | 250030 | 92·6 | 10431 |
| Kurnool | .. | 350314 | 330350 | 94·3 | 316557 | 91·4 | 13793 |
| Bellary | .. | 326459 | 318715 | 97 | 303165 | 81 | 15550 |
| Anantapur | .. | 362372 | 353014 | 97·2 | 341890 | 94·4 | 11124 |
| Chingleput | .. | 351459 | 335280 | 97·1 | 323779 | 91·4 | 11501 |
| Chittoor | .. | 467458 | 463242 | 100 | 447267 | 95·7 | 20975 |
| N. Arcot | .. | 570251 | 549497 | 96·5 | 533049 | 93 | 16448 |
| Salem | .. | 732621 | 722223 | 98·6 | 707695 | 97·2 | 14528 |
| Coimbatore | .. | 608138 | 593572 | 96·7 | 580940 | 95 | 12632 |
| S. Arcot | .. | 657182 | 645539 | 98·5 | 630841 | 95·4 | 14698 |
| Tanjore | .. | 543318 | 515709 | 96·3 | 499551 | 92·6 | 16158 |
| Trichinopoly | .. | 610704 | 602962 | 98·3 | 577963 | 95 | 24999 |
| Madura | .. | 499484 | 491423 | 98 | 475100 | 96 | 16323 |
| Ramnad | .. | 401220 | 386728 | 97·5 | 375211 | 95 | 11517 |
| Tinnevelly | .. | 499224 | 476184 | 96 | 450866 | 90 | 25318 |
| The Nilgiris | .. | 17944 | 17521 | 99·8 | 16384 | 90 | 1137 |
| Malabar | .. | 444385 | 402388 | 90·9 | 394739 | 90 | 7649 |
| S. Kanara | .. | 395062 | 255679 | 65 | 242546 | 60 | 13133 |
| The State | .. | 12321912 | 11599118 | 94·3 | 4133606 | 90 | 465512 |

IV

*State*

Population — Census of 1931

Pasture and Agriculture — Cultivation

| Total landless agricultural labourers | Percentage of (7) to (1) | Landless labourers full-time | Percentage of (9) to (1) | Landless labourers part-time | Total population | Total rural population | Percentage of (1) to (13) |
|---|---|---|---|---|---|---|---|
| (7) | (8) | (9) | (10) | (11) | (12) | (13) | (14) |
| 441382 | 40·3 | 421163 | 38·5 | 20219 | 3607948 | 3331471 | 32·7 |
| 214087 | 44·7 | 205106 | 44·6 | 8981 | 1920582 | 1678246 | 28·1 |
| 238967 | 58·5 | 229109 | 56·1 | 9858 | 1223056 | 1061178 | 38·6 |
| 191512 | 51·3 | 178920 | 48·6 | 12592 | 1254208 | 1075881 | 34·2 |
| 302068 | 47·6 | 273495 | 42·8 | 28573 | 2035660 | 1757295 | 35·7 |
| 282009 | 58·3 | 265720 | 56·2 | 16289 | 1486222 | 1363192 | 35·2 |
| 154544 | 55·5 | 148819 | 55 | 5725 | 949397 | 862976 | 31·2 |
| 208205 | 60 | 197154 | 57·1 | 11051 | 1024961 | 967039 | 33·4 |
| 165257 | 51·5 | 152737 | 45·4 | 12520 | 969774 | 802815 | 41·2 |
| 205464 | 58·3 | 197636 | 55·5 | 7828 | 1050411 | 932990 | 38·7 |
| 123048 | 34·4 | 118305 | 34·3 | 4743 | 1655115 | 1387321 | 25·1 |
| 208553 | 44·6 | 195944 | 42·5 | 12609 | 1447103 | 1364083 | 35·2 |
| 141251 | 24·5 | 136290 | 24·2 | 4961 | 2266989 | 1930071 | 29·5 |
| 283804 | 38·3 | 257603 | 35·6 | 6201 | 2433972 | 2239040 | 32·5 |
| 299606 | 49·1 | 294254 | 47·3 | 5352 | 2445064 | 2167730 | 28·1 |
| 251881 | 37·8 | 244649 | 36·3 | 7232 | 2454507 | 2215485 | 29·7 |
| 233328 | 42·6 | 227880 | 42·5 | 5448 | 2385920 | 1988938 | 27·1 |
| 253309 | 41 | 238958 | 39·3 | 14351 | 1913245 | 1642968 | 37·1 |
| 155603 | 32 | 150536 | 30 | 5067 | 2195747 | 1753361 | 28·5 |
| 80994 | 20 | 77307 | 19·2 | 3687 | 1838955 | 1445723 | 27·5 |
| 192300 | 38 | 182218 | 36 | 10082 | 2046907 | 1522224 | 32·8 |
| 7723 | 44·4 | 7387 | 38·8 | 336 | 169330 | 115082 | 15·6 |
| 188750 | 43·1 | 186803 | 43 | 1947 | 3533944 | 3261518 | 13·8 |
| 152297 | 37·5 | 144438 | 35 | 7859 | 1372241 | 1247519 | 32 |
| 5313311 | 41·6 | 5064450 | 41 | 248861 | 46740107 | 40402851 | 30·4 |

APPENDIX V

*Madras State*

Acreage per Labourer — 1948

| District | Total labouring population (millions) | Total landless agricultural labourers (millions) | Total full-time landless agricultural labourers (millions) | Net area sown (million acres) | Net area sown per labourer (acres) | Net area sown per agricultural labourer (acres) | Net area sown per full-time agricultural labourer (acres) |
|---|---|---|---|---|---|---|---|
| Vizagapatam .. | 1·05 | ·48 | ·46 | 1·54 | 1·4 | 3·2 | 3·3 |
| E. Godavari .. | ·52 | ·25 | ·25 | 1·05 | 2 | 4·2 | 4·2 |
| W. Godavari .. | ·45 | ·28 | ·28 | ·87 | 1·9 | 3·1 | 3·1 |
| Kistna .. | ·43 | ·23 | ·22 | 1·17 | 2·7 | 5 | 5·3 |
| Guntur .. | ·69 | ·35 | ·31 | 2·09 | 3 | 5·9 | 6·7 |
| Nellore .. | ·52 | ·32 | ·30 | 1·29 | 2·4 | 4 | 4·3 |
| Cuddapah .. | ·31 | ·18 | ·18 | 1·03 | 3·3 | 5·7 | 5·7 |
| Kurnool .. | ·34 | ·21 | ·20 | 2·05 | 6 | 9·7 | 10·2 |
| Bellary .. | ·36 | ·19 | ·17 | 2·32 | 6·4 | 12·2 | 13·6 |
| Anantapur .. | ·41 | ·25 | ·24 | 1·95 | 4·7 | 7·8 | 8·1 |
| Chingleput .. | ·39 | ·14 | ·14 | ·74 | 1·9 | 5·2 | 5·2 |
| Chittoor .. | ·58 | ·26 | ·25 | ·78 | 1·3 | 3 | 3·1 |
| N. Arcot .. | ·67 | ·17 | ·17 | 1·15 | 1·7 | 6·7 | 6·7 |
| Salem .. | ·91 | ·35 | ·33 | 1·70 | 1·8 | 4·8 | 5·1 |
| Coimbatore .. | ·71 | ·36 | ·35 | 1·72 | 2·4 | 4·7 | 4·9 |
| S. Arcot .. | ·71 | ·27 | ·26 | 1·33 | 1·8 | 4·9 | 5·1 |
| Tanjore .. | ·58 | ·26 | ·26 | 1·36 | 2·3 | 5·2 | 5·2 |

APPENDIX V — (Continued)

*Madras State*

*Acreage per Labourer* — 1948

| District | Total labouring population (millions) | Total landless agricultural labourers (millions) | Total full-time landless agricultural labourers (millions) | Net area sown (million acres) | Net area sown per labourer (acres) | Net area sown per agricultural labourer (acres) | Net area sown per full-time agricultural labourer (acres) |
|---|---|---|---|---|---|---|---|
| Trichinopoly .. | ·72 | ·30 | ·29 | 1·32 | 1·8 | 4·4 | 4·5 |
| Madura .. | ·57 | ·19 | ·18 | 1·27 | 2·2 | 6·7 | 7 |
| Ramnad .. | ·43 | ·09 | ·08 | 1·24 | 2·8 | 13·7 | 15·5 |
| Tinnevelly .. | ·56 | ·22 | ·21 | 1·24 | 2·2 | 5·6 | 5·9 |
| The Nilgiris .. | ·08 | ·01 | ·009 | ·10 | 1·2 | 10 | 11 |
| Malabar .. | ·48 | ·23 | ·22 | 1·54 | 3·2 | 6·7 | 7 |
| S. Kanara .. | ·30 | ·18 | ·16 | ·57 | 1·9 | 3·1 | 3·5 |
| The State .. | 12·72 | 5·61 | 5·52 | 31·66 | 2·4 | 5·6 | 5·7 |

APPENDIX

*Madras*

Rent Roll of

| District | | Number of holdings | Extent | Assessment | Average Extent | | |
|---|---|---|---|---|---|---|---|
| | | | | | Dry and Wet | Dry | Wet |
| | | | acres | Rs. | acres | acres | acres |
| Vizagapatam | .. | 86208 | 246872 | 982450 | 2·8 | 2·36 | 1·66 |
| E. Godavari | .. | 135933 | 600892 | 2429824 | 4·4 | 3·20 | 1·72 |
| W. Godavari | .. | 138279 | 535624 | 2456803 | 3·8 | 1·77 | 2·10 |
| Kistna | .. | 129432 | 517675 | 1905369 | 3·9 | 2·65 | 1·35 |
| Guntur | .. | 493599 | 1935723 | 5047151 | 3·9 | 3·35 | 0·57 |
| Kurnool | .. | 218974 | 1580195 | 1594187 | 7·2 | 7·04 | 0·17 |
| Bellary | .. | 170644 | 2037609 | 1814358 | 11·3 | 11·69 | 0·25 |
| Anantapur | .. | 195787 | 1881046 | 1354894 | 9·6 | 8·99 | 0·62 |
| Cuddapah | .. | 247837 | 920100 | 1307868 | 3·7 | 3·37 | 0·34 |
| Nellore | .. | 169490 | 937199 | 2181733 | 5·5 | 4·21 | 1·32 |
| Chingleput | .. | 252426 | 698811 | 1905239 | 2·7 | 1·38 | 1·39 |
| S. Arcot | .. | 736224 | 1659291 | 4695910 | 2·2 | 1·73 | 0·62 |
| Chittoor | .. | 179885 | 573979 | 824637 | 3·1 | 2·70 | 0·49 |
| N. Arcot | .. | 491185 | 1231570 | 2914627 | 2·5 | 1·95 | 0·56 |
| Salem | .. | 364741 | 1480746 | 2387642 | 4·0 | 3·80 | 0·26 |
| Coimbatore | .. | 312961 | 2348437 | 3103458 | 7·5 | 7·65 | 0·28 |
| Trichinopoly | .. | 451356 | 1532855 | 2889013 | 3·3 | 3·01 | 0·39 |
| Tanjore | .. | 450066 | 1164148 | 7231965 | 2·5 | 0·83 | 1·75 |
| Ramnad | .. | 100049 | 310707 | 576234 | 3·1 | 2·81 | 0·30 |
| Madura | .. | 343370 | 1140733 | 2696805 | 3·3 | 2·70 | 0·62 |
| Tinnevelly | .. | 364890 | 1232174 | 2578222 | 3·3 | 2·87 | 0·50 |
| Malabar | .. | 430995 | 1703337 | 4387556 | 3·9 | 2·65 | 1·30 |
| S. Kanara | .. | 152061 | — | 2888595 | — | — | — |
| The Nilgiris | .. | 18433 | 239108 | 168608 | 12·9 | 12·0 | 0·4 |
| The State | .. | 6634725 | *24009631 | 58303248 | *3·7 | — | — |

* Excluding S. Kanara.

(Taken from the Statistical Atlas for Madras, 1940-41. State figures and average extent of holdings calculated by the author).

VI

*State*

Government, 1940-41

| Average Assessment | | | | | | Number of Holdings | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Dry | | | Wet | | | On Rs. 10 and less | On Rs. 30 and less but over Rs. 10 | On Rs. 50 and less but over Rs. 30 | On Rs. 100 and less but over Rs. 50 | Over Rs. 100 |
| Rs. | as. | ps. | Rs. | as. | ps. | | | | | |
| 2 | 11 | 3 | 8 | 11 | 1 | 59977 | 17251 | 5094 | 2718 | 1168 |
| 3 | 1 | 7 | 15 | 6 | 7 | 78644 | 36160 | 10581 | 6930 | 3618 |
| 2 | 8 | 2 | 15 | 9 | 1 | 78633 | 37699 | 11453 | 6545 | 3649 |
| 4 | 3 | 8 | 10 | 7 | 11 | 80249 | 32445 | 8900 | 5609 | 2229 |
| 6 | 8 | 3 | 3 | 11 | 4 | 320865 | 129610 | 27233 | 12241 | 3660 |
| 6 | 2 | 0 | 1 | 2 | 6 | 172508 | 37584 | 5820 | 2477 | 585 |
| 9 | 3 | 3 | 1 | 10 | 1 | 121128 | 36669 | 7701 | 3778 | 1368 |
| 3 | 15 | 3 | 2 | 15 | 3 | 159153 | 28329 | 5190 | 2402 | 713 |
| 3 | 3 | 5 | 2 | 1 | 0 | 204619 | 32528 | 7341 | 2474 | 875 |
| 4 | 6 | 7 | 8 | 7 | 6 | 108643 | 41342 | 11018 | 5202 | 3285 |
| 1 | 10 | 10 | 5 | 3 | 11 | 209602 | 31797 | 6499 | 3152 | 1375 |
| 2 | 2 | 10 | 4 | 3 | 3 | 624965 | 83142 | 16704 | 7916 | 3497 |
| 1 | 12 | 3 | 2 | 13 | 1 | 107652 | 17807 | 2753 | 1056 | 331 |
| 2 | 5 | 2 | 3 | 9 | 9 | 387510 | 84710 | 12628 | 4854 | 1483 |
| 4 | 11 | 9 | 1 | 13 | 0 | 294884 | 59087 | 7641 | 2500 | 629 |
| 8 | 2 | 3 | 2 | 5 | 2 | 215297 | 77345 | 11870 | 6617 | 1833 |
| 3 | 2 | 8 | 3 | 3 | 7 | 382569 | 54227 | 8331 | 4266 | 1963 |
| 1 | 7 | 3 | 14 | 9 | 10 | 325423 | 79943 | 20729 | 14089 | 9873 |
| 3 | 12 | 8 | 1 | 15 | 6 | 83273 | 14054 | 1794 | 739 | 189 |
| 3 | 10 | 7 | 4 | 3 | 1 | 274451 | 52448 | 9318 | 5074 | 2079 |
| 2 | 1 | 1 | 5 | 0 | 0 | 303086 | 47822 | 7854 | 1994 | 2134 |
| 4 | 14 | 10 | 5 | 4 | 0 | 355544 | 49642 | 11964 | 7027 | 6818 |
| —— | | | 18 | 15 | 1 | 102275 | 25449 | 10279 | 7976 | 6082 |
| —— | | | 0 | 14 | 5 | 16917 | 902 | 234 | 156 | 234 |
| —— | | | *2 | 4 | 1 | 5115867 | 1106992 | 228929 | 104792 | 59672 |

## APPENDIX VII

*Madras State*

Classification of Area

(in million acres)

| District | | Total area 1947-48 | Net area sown: Average for 1940-45 | Net area sown: 1945-46 | Net area sown: 1946-47 | Net area sown: 1947-48 | Forests: Average for 1940-45 | Forests: 1945-46 | Forests: 1946-47 | Forests: 1947-48 | Cultivable Waste: Average for 1940-45 | Cultivable Waste: 1945-46 | Cultivable Waste: 1946-47 | Cultivable Waste: 1947-48 | Current Fallows: Average for 1940-45 | Current Fallows: 1945-40 | Current Fallows: 1946-47 | Current Fallows: 1947-48 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Vizagapatam | .. | 5·20 | 1·54 | 1·56 | 1·48 | 1·51 | 1·25 | 1·34 | 1·34 | 1·34 | ·65 | ·63 | ·64 | ·64 | ·55 | ·54 | ·61 | ·51 |
| E. Godavari | .. | 3·44 | 1·05 | 1·03 | ·99 | 1·01 | ·91 | ·86 | ·86 | ·86 | ·62 | ·59 | ·62 | ·60 | ·18 | ·17 | ·18 | ·19 |
| W. Godavari | .. | 1·92 | ·87 | ·88 | ·88 | ·89 | ·08 | ·12 | ·12 | ·12 | ·26 | ·27 | ·27 | ·28 | ·28 | ·38 | ·38 | ·37 |
| Kistna | .. | 2·22 | 1·17 | 1·16 | 1·18 | 1·17 | ·12 | ·13 | ·13 | ·13 | ·25 | ·28 | ·28 | ·29 | ·24 | ·24 | ·24 | ·24 |
| Guntur | .. | 3·69 | 2·09 | 2·12 | 2·10 | 2·14 | ·46 | ·46 | ·47 | ·47 | ·21 | ·21 | ·30 | ·27 | ·45 | ·44 | ·37 | ·36 |
| Kurnool | .. | 4·86 | 2·05 | 1·98 | 1·99 | 1·96 | 1·65 | 1·65 | 1·65 | 1·65 | ·61 | ·64 | ·63 | ·64 | ·26 | ·30 | ·29 | ·31 |
| Bellary | .. | 3·65 | 2·32 | 2·30 | 2·37 | 2·35 | ·36 | ·36 | ·36 | ·36 | ·43 | ·41 | ·41 | ·39 | ·31 | ·35 | ·27 | ·32 |
| Anantapur | .. | 4·31 | 1·95 | 1·88 | 2·01 | 2·04 | ·45 | ·45 | ·45 | ·45 | ·95 | ·99 | ·88 | ·83 | ·55 | ·52 | ·50 | ·51 |
| Cuddapah | .. | 3·80 | 1·03 | ·96 | 1·00 | ·97 | 1·16 | 1·16 | 1·17 | 1·17 | ·89 | ·86 | ·84 | ·87 | ·26 | ·36 | ·32 | ·33 |
| Nellore | .. | 5·09 | 1·29 | 1·24 | 1·29 | 1·17 | ·47 | ·47 | ·47 | ·47 | 1·04 | 1·17 | 1·03 | 1·10 | ·71 | ·61 | ·70 | ·75 |
| Chingleput | .. | 1·96 | ·74 | ·66 | ·68 | ·65 | ·13 | ·12 | ·12 | ·12 | ·17 | ·29 | ·27 | ·30 | ·21 | ·28 | ·28 | ·29 |
| S. Arcot | .. | 2·69 | 1·33 | 1·31 | 1·34 | 1·30 | ·16 | ·16 | ·16 | ·16 | ·22 | ·21 | ·19 | ·19 | ·33 | ·35 | ·34 | ·39 |
| Chittoor | .. | 3·77 | ·78 | ·72 | ·76 | ·73 | ·57 | ·52 | ·52 | ·52 | ·59 | ·62 | ·62 | ·62 | ·42 | ·42 | ·41 | ·44 |
| N. Arcot | .. | 2·97 | 1·15 | 1·07 | 1·14 | 1·12 | ·77 | ·77 | ·77 | ·77 | ·28 | ·39 | ·36 | ·36 | ·29 | ·27 | ·23 | ·25 |
| Salem | .. | 4·50 | 1·70 | 1·65 | 1·65 | 1·63 | 1·01 | 1·05 | 1·02 | 1·02 | ·70 | ·74 | ·73 | ·75 | ·35 | ·38 | ·40 | ·40 |
| Coimbatore | .. | 4·55 | 1·72 | 1·76 | 1·76 | 1·68 | 1·45 | 1·43 | 1·43 | 1·44 | ·12 | ·12 | ·18 | ·23 | ·74 | ·90 | ·86 | ·80 |
| Trichinopoly | .. | 2·77 | 1·32 | 1·28 | 1·31 | 1·26 | ·14 | ·14 | ·14 | ·15 | ·28 | ·32 | ·35 | ·34 | ·60 | ·58 | ·51 | ·58 |
| Tanjore | .. | 2·40 | 1·36 | 1·37 | 1·38 | 1·36 | ·02 | ·02 | ·02 | ·02 | ·02 | ·20 | ·19 | ·20 | ·18 | ·18 | ·18 | ·18 |
| Madura | .. | 3·12 | 1·27 | 1·19 | 1·20 | 1·14 | ·74 | ·73 | ·74 | ·74 | ·58 | ·69 | ·69 | ·75 | ·30 | ·26 | ·27 | ·26 |
| Ramnad | .. | 3·09 | 1·24 | 1·07 | 1·12 | ·80 | ·06 | ·06 | ·05 | ·05 | ·63 | ·53 | ·59 | ·67 | ·40 | ·67 | ·58 | ·83 |
| Tinnevelly | .. | 2·78 | 1·24 | 1·14 | 1·20 | ·98 | ·23 | ·31 | ·31 | ·31 | ·12 | ·16 | ·12 | ·19 | ·73 | ·76 | ·74 | ·89 |
| Malabar | .. | 3·71 | 1·54 | 1·53 | 1·54 | 1·50 | ·36 | ·36 | ·36 | ·36 | ·95 | ·96 | ·96 | ·99 | ·25 | ·25 | ·25 | ·24 |
| S. Kanara | .. | 2·58 | ·57 | ·56 | ·56 | ·56 | ·52 | ·52 | ·52 | ·52 | ·64 | ·63 | ·63 | ·64 | ·44 | ·46 | ·46 | ·45 |
| The Nilgiris | .. | 0·63 | ·10 | ·11 | ·10 | ·96 | ·31 | ·31 | ·31 | ·31 | ·05 | ·05 | ·05 | ·05 | .13 | .13 | .13 | .13 |
| The State | .. | 79·93 | 31·66 | 30·53 | 31·04 | 30·08 | 13·40 | 13·52 | 13·50 | 13·52 | 11·47 | 11·95 | 11·85 | 12·19 | 9·32 | 9·78 | 9·50 | 10·04 |

## Appendix VIII

*Madras State*

### Classification of Cultivated Area

(in million acres)

| District | Gross area sown | | | | Net area sown | | | | Area sown more than once | | | | Area irrigated | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Average for 1940-45 | 1945-46 | 1946-47 | 1947-48 | Average for 1940-45 | 1945-46 | 1946-47 | 1947-48 | Average for 1940-45 | 1945-46 | 1946-47 | 1947-48 | Average for 1940-45 | 1945-46 | 1946-47 | 1947-48 |
| Vizagapatam .. | 2·21 | 2·15 | 2·13 | 2·06 | 1·54 | 1·56 | 1·48 | 1·57 | ·68 | ·60 | ·66 | ·48 | ·86 | ·89 | ·90 | ·87 |
| E. Godavari .. | 1·38 | 1·35 | 1·32 | 1·30 | 1·05 | 1·03 | ·99 | 1·01 | ·33 | ·32 | ·33 | ·30 | ·61 | ·70 | ·62 | ·55 |
| W. Godavari .. | 1·05 | 1·12 | 1·13 | 1·14 | ·87 | ·88 | ·88 | ·89 | ·19 | ·24 | ·25 | ·26 | ·66 | ·79 | ·73 | ·83 |
| Kistna .. | 1·30 | 1·36 | 1·36 | 1·30 | 1·17 | 1·16 | 1·18 | 1·17 | ·14 | ·20 | ·18 | ·13 | ·64 | ·67 | ·68 | ·68 |
| Guntur .. | 2·41 | 2·40 | 2·37 | 2·40 | 2·09 | 2·12 | 2·10 | 2·14 | ·30 | ·29 | ·28 | ·27 | ·43 | ·45 | ·44 | ·45 |
| Kurnool .. | 2·12 | 2·03 | 2·04 | 2·01 | 2·05 | 1·98 | 1·99 | 1·96 | ·06 | ·05 | ·06 | ·06 | ·11 | ·12 | ·13 | ·12 |
| Bellary .. | 2·46 | 2·43 | 2·57 | 2·52 | 2·32 | 2·30 | 2·37 | 2·35 | ·14 | ·13 | ·19 | ·17 | ·08 | ·06 | ·07 | ·06 |
| Anantapur .. | 2·03 | 1·93 | 2·12 | 2·12 | 1·95 | 1·88 | 2·01 | 2·04 | ·08 | ·05 | ·12 | ·08 | ·20 | ·19 | ·27 | ·23 |
| Cuddapah .. | 1·13 | 1·04 | 1·01 | 1·05 | 1·03 | ·96 | 1·00 | ·97 | ·10 | ·08 | ·10 | ·08 | ·26 | ·25 | ·30 | ·22 |
| Nellore .. | 1·50 | 1·38 | 1·49 | 1·33 | 1·29 | 1·24 | 1·29 | 1·17 | ·20 | ·14 | ·20 | ·16 | ·57 | ·54 | ·66 | ·56 |
| Chingleput .. | 0·97 | ·81 | ·95 | ·77 | ·74 | ·66 | ·68 | ·65 | ·24 | ·14 | ·27 | ·13 | ·56 | ·54 | ·64 | ·43 |
| S. Arcot .. | 1·62 | 1·52 | 1·59 | 1·51 | 1·33 | 1·31 | 1·34 | 1·30 | ·28 | ·21 | ·24 | ·21 | ·57 | ·67 | ·68 | ·52 |
| Chittoor .. | ·91 | ·80 | ·88 | ·80 | ·78 | ·72 | ·76 | ·73 | ·13 | ·07 | ·12 | ·07 | ·32 | ·29 | ·36 | ·25 |
| N. Arcot .. | 1·46 | 1·31 | 1·46 | 1·33 | 1·15 | 1·07 | 1·14 | 1·12 | ·30 | ·24 | ·33 | ·21 | ·52 | ·55 | ·71 | ·41 |
| Salem .. | 1·98 | 1·85 | 1·91 | 1·84 | 1·70 | 1·65 | 1·65 | 1·63 | ·29 | ·21 | ·26 | ·21 | ·31 | ·37 | ·41 | ·30 |
| Coimbatore .. | 2·31 | 2·11 | 2·10 | 2·00 | 1·72 | 1·76 | 1·75 | 1·68 | ·37 | ·35 | ·33 | ·31 | ·58 | ·69 | ·67 | ·55 |
| Trichinopoly .. | 1·54 | 1·44 | 1·50 | 1·43 | 1·32 | 1·28 | 1·31 | 1·26 | ·19 | ·16 | ·18 | ·17 | ·39 | ·46 | ·48 | ·33 |
| Tanjore .. | 1·61 | 1·68 | 1·67 | 1·64 | 1·36 | 1·37 | 1·38 | 1·36 | ·25 | ·30 | ·30 | ·28 | 1·20 | 1·35 | 1·31 | 1·78 |
| Madura .. | 1·49 | 1·38 | 1·40 | 1·35 | 1·27 | 1·19 | 1·20 | 1·14 | ·21 | ·19 | ·20 | ·21 | ·47 | ·54 | ·61 | ·45 |
| Ramnad .. | 1·31 | 1·13 | 1·18 | ·87 | 1·24 | 1·07 | 1·12 | ·80 | ·07 | ·07 | ·07 | ·07 | ·37 | ·41 | ·51 | ·36 |
| Tinnevelly .. | 1·46 | 1·33 | 1·41 | 1·16 | 1·24 | 1·14 | 1·20 | ·98 | ·22 | ·19 | ·21 | ·18 | ·39 | ·49 | ·53 | ·33 |
| Malabar .. | 1·82 | 1·81 | 1·82 | 1·77 | 1·54 | 1·53 | 1·54 | 1·50 | ·31 | ·27 | ·28 | ·27 | — | — | — | — |
| S. Kanara .. | ·77 | ·80 | ·81 | ·81 | ·57 | ·56 | ·56 | ·56 | ·20 | ·24 | ·25 | ·24 | — | — | — | — |
| The Nilgiris .. | ·11 | ·11 | ·11 | ·10 | ·10 | ·11 | ·10 | ·96 | ·007 | ·003 | ·005 | ·005 | — | — | — | — |
| The State .. | 37·14 | 35·27 | 36·41 | 34·63 | 31·66 | 30·53 | 31·03 | 30·08 | 5·38 | 4·74 | 5·38 | 4·55 | 10·14 | 11·02 | 11·73 | 9·68 |

APPENDIX

*Madras*

Area Sown to

| District | Paddy: Average for 1940-45 | Paddy: 1945-46 | Paddy: 1946-47 | Paddy: 1947-48 | Cholam: Average for 1940-45 | Cholam: 1945-46 | Cholam: 1946-47 | Cholam: 1947-48 |
|---|---|---|---|---|---|---|---|---|
| Vizagapatam .. | 731 | 724 | 791 | 791 | 77 | 61 | 64 | 51 |
| E. Godavari .. | 685 | 707 | 659 | 698 | 100 | 82 | 86 | 70 |
| W. Godavari .. | 704 | 754 | 756 | 773 | 68 | 61 | 61 | 54 |
| Kistna .. | 621 | 659 | 658 | 661 | 236 | 210 | 209 | 201 |
| Guntur .. | 441 | 452 | 433 | 464 | 413 | 380 | 413 | 465 |
| Kurnool .. | 76 | 76 | 89 | 97 | 581 | 448 | 482 | 479 |
| Bellary .. | 31 | 30 | 31 | 33 | 672 | 554 | 698 | 662 |
| Anantapur .. | 116 | 70 | 139 | 134 | 305 | 234 | 293 | 248 |
| Cuddapah .. | 133 | 104 | 140 | 121 | 299 | 238 | 264 | 239 |
| Nellore .. | 452 | 376 | 471 | 404 | 384 | 370 | 356 | 321 |
| Chingleput .. | 688 | 580 | 716 | 547 | 6 | 4 | 4 | 4 |
| S. Arcot .. | 602 | 589 | 602 | 572 | 83 | 79 | 86 | 60 |
| Chittoor .. | 243 | 177 | 241 | 191 | 44 | 30 | 36 | 29 |
| N. Arcot .. | 536 | 433 | 579 | 452 | 80 | 72 | 78 | 61 |
| Salem .. | 226 | 190 | 238 | 227 | 257 | 255 | 262 | 225 |
| Coimbatore .. | 123 | 134 | 140 | 142 | 533 | 453 | 474 | 434 |
| Trichinopoly .. | 366 | 330 | 357 | 347 | 266 | 255 | 251 | 244 |
| Tanjore .. | 1296 | 1350 | 1326 | 1320 | — | — | — | — |
| Madura .. | 359 | 342 | 357 | 409 | 263 | 247 | 286 | 244 |
| Ramnad .. | 391 | 345 | 446 | 330 | 65 | 43 | 49 | 38 |
| Tinnevelly .. | 347 | 346 | 383 | 313 | 91 | 73 | 72 | 82 |
| Malabar .. | 875 | 825 | 828 | 806 | 1 | 1 | 1 | — |
| S. Kanara .. | 590 | 598 | 601 | 594 | — | — | — | — |
| The Nilgiris .. | 7 | 6 | 7 | 6 | — | — | — | — |
| The State .. | 10651 | 10203 | 10986 | 10434 | 4812 | 4150 | 4527 | 4211 |

IX

*State*

Crops, 1940-48 (in thousand acres)

| Cumbu | | | | Ragi | | | | Total cereals | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Average for 1940-45 | 1945-46 | 1946-47 | 1947-48 | Average for 1940-45 | 1945-46 | 1946-47 | 1947-48 | Average for 1940-45 | 1945-46 | 1946-47 | 1947-48 |
| 183 | 167 | 159 | 161 | 246 | 215 | 177 | 164 | 1329 | 1246 | 1274 | 1252 |
| 58 | 46 | 45 | 46 | 26 | 14 | 15 | 16 | 892 | 867 | 822 | 848 |
| 12 | 8 | 7 | 7 | 8 | 5 | 4 | 4 | 800 | 834 | 838 | 846 |
| 21 | 16 | 16 | 14 | 8 | 4 | 4 | 4 | 878 | 902 | 896 | 891 |
| 178 | 201 | 158 | 190 | 18 | 14 | 12 | 16 | 1452 | 1431 | 1348 | 1519 |
| 63 | 63 | 62 | 73 | 23 | 20 | 11 | 21 | 1311 | 1147 | 1133 | 1202 |
| 128 | 147 | 158 | 163 | 27 | 26 | 23 | 24 | 1369 | 1340 | 1497 | 1441 |
| 164 | 167 | 172 | 177 | 99 | 96 | 94 | 91 | 1104 | 1021 | 1165 | 1094 |
| 107 | 91 | 100 | 104 | 62 | 54 | 50 | 58 | 752 | 645 | 709 | 670 |
| 109 | 105 | 117 | 110 | 82 | 93 | 93 | 85 | 1197 | 1080 | 1193 | 1058 |
| 15 | 10 | 14 | 8 | 89 | 67 | 78 | 77 | 833 | 679 | 834 | 655 |
| 96 | 97 | 103 | 86 | 81 | 75 | 73 | 70 | 1032 | 997 | 994 | 924 |
| 143 | 117 | 129 | 117 | 157 | 136 | 140 | 127 | 621 | 488 | 571 | 496 |
| 78 | 60 | 66 | 61 | 104 | 98 | 93 | 95 | 907 | 749 | 884 | 750 |
| 290 | 254 | 244 | 211 | 279 | 285 | 280 | 276 | 1251 | 1220 | 1249 | 1180 |
| 297 | 266 | 265 | 254 | 175 | 163 | 161 | 170 | 1225 | 1104 | 1136 | 1090 |
| 241 | 220 | 241 | 209 | 57 | 44 | 45 | 49 | 1099 | 1006 | 1043 | 1003 |
| 6 | 5 | 4 | 3 | 17 | 11 | 15 | 11 | 1363 | 1411 | 1379 | 1367 |
| 45 | 47 | 55 | 41 | 59 | 51 | 51 | 47 | 932 | 836 | 893 | 877 |
| 146 | 98 | 93 | 60 | 92 | 77 | 65 | 37 | 869 | 701 | 776 | 539 |
| 187 | 131 | 157 | 146 | 32 | 24 | 27 | 27 | 770 | 655 | 706 | 614 |
| — | — | — | — | 11 | 6 | 5 | 4 | 901 | 842 | 843 | 818 |
| — | — | — | — | 10 | 7 | 6 | 7 | 597 | 605 | 607 | 601 |
| — | — | — | — | 4 | 3 | 3 | 3 | 19 | 18 | 17 | 16 |
| 2567 | 2317 | 2366 | 2239 | 1763 | 1587 | 1533 | 1482 | 23552 | 21834 | 22807 | 21759 |

APPENDIX

*Madras*

Area Sown to

| District | Total Pulses | | | | Sugarcane | | | |
|---|---|---|---|---|---|---|---|---|
| | Average for 1940–45 | 1945–46 | 1946–47 | 1947–48 | Average for 1940–45 | 1945–46 | 1946–47 | 1947–48 |
| Vizagapatam .. | 327 | 339 | 324 | 291 | 31 | 26 | 31 | 30 |
| E. Godavari .. | 184 | 173 | 173 | 159 | 9 | 10 | 14 | 17 |
| W. Godavari .. | 67 | 74 | 73 | 74 | 2 | 3 | 7 | 9 |
| Kistna .. | 95 | 108 | 115 | 120 | 3 | 4 | 4 | 5 |
| Guntur .. | 113 | 111 | 149 | 182 | ·2 | ·2 | 3 | ·4 |
| Kurnool .. | 140 | 128 | 148 | 145 | ·6 | ·6 | ·7 | 1 |
| Bellary .. | 170 | 165 | 179 | 187 | 10 | 10 | 11 | 15 |
| Anantapur .. | 307 | 226 | 302 | 326 | 3 | 6 | 7 | 10 |
| Cuddapah .. | 66 | 56 | 66 | 61 | ·7 | ·6 | 1 | 2 |
| Nellore .. | 134 | 113 | 109 | 116 | — | — | — | — |
| Chingleput .. | 16 | 11 | 9 | 11 | ·3 | ·3 | ·4 | 1 |
| S. Arcot .. | 45 | 34 | 42 | 46 | 17 | 18 | 24 | 34 |
| Chittoor .. | 52 | 38 | 43 | 31 | 11 | 17 | 19 | 24 |
| N. Arcot .. | 92 | 82 | 89 | 72 | 12 | 18 | 19 | 33 |
| Salem .. | 286 | 270 | 280 | 226 | 9 | 9 | 10 | 17 |
| Coimbatore .. | 320 | 325 | 286 | 292 | 10 | 10 | 15 | 20 |
| Trichinopoly .. | 82 | 70 | 73 | 67 | 10 | 13 | 17 | 23 |
| Tanjore .. | 101 | 115 | 127 | 111 | 1·2 | 1 | 2 | 4 |
| Madura .. | 107 | 110 | 97 | 91 | 4 | 5 | 9 | 16 |
| Ramnad .. | 39 | 34 | 38 | 26 | ·6 | ·6 | 2 | 2 |
| Tinnevelly .. | 130 | 137 | 139 | 70 | ·1 | ·3 | ·3 | 1 |
| Malabar .. | 26 | 25 | 26 | 26 | ·2 | ·1 | ·1 | ·2 |
| S. Kanara .. | 46 | 47 | 48 | 45 | 5 | 6 | 6 | 7 |
| The Nilgiris .. | 1 | 1 | 1 | — | — | — | — | — |
| The State .. | 2947 | 2792 | 2935 | 2776 | 141 | 161 | 203 | 272 |

IX (CONTINUED)

*State*

Crops — 1940-48 (in thousand acres)

| Total Sugar | | | | Fruits and Vegetables | | | | Total Food Crops | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Average for 1940-45 | 1945-46 | 1946-47 | 1947-48 | Average for 1940-45 | 1945-46 | 1946-47 | 1947-48 | Average for 1940-45 | 1945-46 | 1946-47 | 1947-48 |
| 34 | 31 | 33 | 33 | 54 | 53 | 52 | 50 | 1767 | 1689 | 1703 | 1644 |
| 10 | 10 | 19 | 17 | 55 | 55 | 58 | 49 | 1169 | 1130 | 1114 | 1106 |
| 5 | 4 | 8 | 10 | 26 | 31 | 29 | 31 | 909 | 961 | 970 | 980 |
| 4 | 4 | 5 | 5 | 20 | 23 | 20 | 21 | 1029 | 1056 | 1062 | 1059 |
| 4 | 4 | 6 | 4 | 13 | 17 | 18 | 15 | 1689 | 1672 | 1655 | 1852 |
| ·8 | 1 | 1 | 1 | 9 | 10 | 9 | 8 | 1488 | 1318 | 1349 | 1392 |
| 12 | 12 | 13 | 17 | 7 | 8 | 9 | 7 | 1579 | 1545 | 1731 | 1690 |
| 12 | 11 | 14 | 15 | 10 | 13 | 11 | 11 | 1457 | 1299 | 1524 | 1475 |
| 2 | 2 | 2 | 3 | 29 | 34 | 30 | 32 | 865 | 759 | 837 | 782 |
| 1 | 2 | 1 | 1 | 10 | 9 | 12 | 11 | 1354 | 1230 | 1332 | 1197 |
| 2 | 2 | 2 | 3 | 16 | 15 | 11 | 16 | 873 | 715 | 861 | 690 |
| 18 | 20 | 25 | 35 | 19 | 24 | 24 | 19 | 1123 | 1084 | 1697 | 1029 |
| 13 | 19 | 21 | 26 | 32 | 33 | 33 | 30 | 735 | 563 | 680 | 597 |
| 14 | 20 | 21 | 35 | 24 | 26 | 22 | 23 | 1051 | 891 | 1025 | 893 |
| 10 | 10 | 11 | 18 | 19 | 25 | 20 | 27 | 1618 | 1547 | 1583 | 1475 |
| 12 | 12 | 16 | 22 | 15 | 17 | 14 | 20 | 1602 | 1481 | 1418 | 1458 |
| 10 | 14 | 17 | 23 | 29 | 43 | 42 | 47 | 1259 | 1185 | 1214 | 1171 |
| 4 | 4 | 5 | 6 | 26 | 27 | 28 | 24 | 1505 | 1569 | 1540 | 1521 |
| 5 | 6 | 11 | 17 | 35 | 42 | 38 | 41 | 1096 | 1015 | 1059 | 1048 |
| 5 | 3 | 4 | 4 | 12 | 16 | 14 | 10 | 954 | 778 | 853 | 591 |
| 38 | 33 | 38 | 36 | 18 | 22 | 21 | 23 | 1000 | 898 | 955 | 790 |
| 10 | 10 | 11 | 12 | 205 | 221 | 219 | 225 | 1294 | 1256 | 1238 | 1221 |
| 5 | 7 | 7 | 7 | 28 | 34 | 36 | 40 | 694 | 711 | 717 | 715 |
| — | — | — | — | 21 | 23 | 21 | 18 | 45 | 41 | 41 | 37 |
| 229 | 241 | 291 | 353 | 739 | 831 | 792 | 798 | 28155 | 26426 | 27628 | 26410 |

APPENDIX

*Madras*

Area Sown to

| District | | Groundnut | | | | Gingelly | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | Average for 1940-45 | 1945-46 | 1946-47 | 1947-48 | Average for 1940-45 | 1945-46 | 1946-47 | 1947-48 |
| Vizagapatam | .. | 247 | 250 | 272 | 236 | 130 | 120 | 104 | 102 |
| E. Godavari | .. | 6 | 6 | 4 | 7 | 71 | 72 | 79 | 76 |
| W. Godavari | .. | 26 | 30 | 25 | 31 | 62 | 64 | 69 | 68 |
| Kistna | .. | 141 | 167 | 156 | 158 | 4 | 5 | 5 | 7 |
| Guntur | .. | 252 | 263 | 233 | 182 | 1 | 2 | 2 | 3 |
| Kurnool | .. | 397 | 549 | 547 | 497 | 2 | 1 | 1 | 1 |
| Bellary | .. | 305 | 434 | 399 | 356 | 15 | 19 | 25 | 16 |
| Anantapur | .. | 313 | 415 | 393 | 453 | 31 | 41 | 37 | 30 |
| Cuddapah | .. | 166 | 221 | 206 | 223 | 4 | 4 | 4 | 5 |
| Nellore | .. | 17 | 15 | 17 | 12 | 5 | 3 | 14 | 5 |
| Chingleput | .. | 67 | 57 | 52 | 45 | 17 | 17 | 22 | 25 |
| S. Arcot | .. | 406 | 384 | 422 | 403 | 56 | 24 | 39 | 44 |
| Chittoor | .. | 152 | 177 | 181 | 186 | 4 | 5 | 5 | 4 |
| N. Arcot | .. | 361 | 175 | 392 | 395 | 16 | 12 | 16 | 12 |
| Salem | .. | 155 | 169 | 191 | 243 | 16 | 36 | 44 | 34 |
| Coimbatore | .. | 180 | 194 | 207 | 230 | 50 | 23 | 30 | 37 |
| Trichinopoly | .. | 137 | 145 | 160 | 145 | 80 | 61 | 72 | 77 |
| Tanjore | .. | 47 | 44 | 48 | 44 | 13 | 13 | 19 | 15 |
| Madura | .. | 129 | 148 | 141 | 140 | 24 | 25 | 24 | 30 |
| Ramnad | .. | 47 | 97 | 78 | 60 | 23 | 18 | 14 | 16 |
| Tinnevelly | .. | 17 | 21 | 21 | 17 | 41 | 16 | 40 | 24 |
| Malabar | .. | 8 | 5 | 5 | 5 | 8 | 7 | 7 | 6 |
| S. Kanara | .. | — | — | — | — | 3 | 3 | 3 | 3 |
| The Nilgiris | .. | — | — | — | — | — | — | — | — |
| The State | .. | 3598 | 4165 | 4121 | 4067 | 726 | 599 | 673 | 638 |

IX (CONTINUED)

*State*

Crops — 1940-48

| Castor | | | | Cocoanut | | | | Total Oilseeds | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Average for 1940-45 | 1945-46 | 1946-47 | 1947-48 | Average for 1940-45 | 1945-46 | 1946-47 | 1947-48 | Average for 1940-45 | 1945-46 | 1946-47 | 1947-48 |
| 2 | 1 | 1 | 2 | 12 | 15 | 11 | 12 | 402 | 411 | 388 | 364 |
| 4 | 1 | 2 | 2 | 55 | 57 | 56 | 56 | 136 | 136 | 142 | 141 |
| 6 | 5 | 6 | 6 | 10 | 10 | 10 | 12 | 105 | 109 | 110 | 116 |
| 3 | 2 | 2 | 2 | 1 | 1 | 1 | 1 | 150 | 174 | 163 | 168 |
| 28 | 25 | 22 | 24 | ·1 | ·1 | ·1 | ·1 | 282 | 292 | 259 | 210 |
| 34 | 30 | 31 | 33 | ·1 | ·1 | — | — | 435 | 583 | 586 | 535 |
| 24 | 19 | 19 | 18 | 2 | 2 | 1 | 1 | 361 | 485 | 430 | 407 |
| 69 | 61 | 55 | 59 | ·4 | ·4 | 1 | ·4 | 425 | 530 | 497 | 553 |
| 9 | 7 | 7 | 9 | ·1 | ·1 | ·2 | ·1 | 182 | 234 | 222 | 239 |
| 41 | 39 | 42 | 46 | ·2 | ·2 | ·2 | ·4 | 64 | 58 | 74 | 65 |
| — | — | — | — | 6 | 5 | 7 | 6 | 91 | 80 | 82 | 76 |
| 1 | 1 | 1 | 1 | 4 | 3 | 3 | 3 | 467 | 413 | 466 | 452 |
| 5 | 4 | 3 | 4 | 3 | 2 | 2 | 2 | 171 | 197 | 199 | 201 |
| 5 | 5 | 4 | 4 | 12 | 12 | 12 | 12 | 396 | 404 | 424 | 425 |
| 20 | 19 | 18 | 19 | 9 | 10 | 10 | 10 | 253 | 236 | 204 | 311 |
| 7 | 6 | 5 | 5 | 12 | 12 | 11 | 12 | 250 | 235 | 255 | 285 |
| 7 | 6 | 6 | 5 | 6 | 6 | 6 | 6 | 232 | 219 | 245 | 235 |
| ·1 | ·4 | ·2 | ·1 | 36 | 35 | 37 | 37 | 102 | 98 | 112 | 104 |
| 2 | 2 | 1 | 1 | 8 | 8 | 8 | 8 | 163 | 183 | 174 | 180 |
| 1 | 1 | 1 | 1 | 7 | 6 | 6 | 5 | 92 | 122 | 98 | 81 |
| 1 | 1 | ·4 | 1 | 5 | 5 | 5 | 5 | 61 | 53 | 62 | 47 |
| ·6 | 1 | ·4 | ·2 | 365 | 370 | 378 | 371 | 381 | 382 | 391 | 383 |
| ·2 | ·2 | ·2 | ·2 | 49 | 53 | 53 | 54 | 51 | 56 | 56 | 57 |
| — | — | — | — | — | — | — | — | ·1 | — | — | — |
| 270 | 235 | 229 | 241 | 603 | 614 | 619 | 616 | 5255 | 5690 | 5702 | 5636 |

APPENDIX

*Madras*

Area Sown to

| District | | Cotton | | | | Other Fibres | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | Average for 1940–45 | 1945–46 | 1946–47 | 1947–48 | Average for 1940–45 | 1945–46 | 1946–47 | 1947–48 |
| Vizagapatam | .. | 9 | 5 | 5 | 5 | 29 | 23 | 20 | 28 |
| E. Godavari | .. | 6 | 3 | 5 | 3 | 33 | 33 | 26 | 15 |
| W. Godavari | .. | ·5 | ·2 | ·3 | ·1 | 4 | 4 | 3 | 2 |
| Kistna | .. | 6 | 2 | 2 | ·4 | 32 | 18 | 49 | 18 |
| Guntur | .. | 60 | 47 | 45 | 37 | 173 | 176 | 98 | 75 |
| Kurnool | .. | 180 | 87 | 95 | 71 | 182 | 89 | 96 | 80 |
| Bellary | .. | 496 | 382 | 398 | 420 | 519 | 386 | 402 | 425 |
| Anantapur | .. | 136 | 81 | 88 | 81 | 138 | 83 | 90 | 83 |
| Cuddapah | .. | 65 | 35 | 34 | 23 | 66 | 36 | 35 | 24 |
| Nellore | .. | 32 | 29 | 32 | 27 | 35 | 32 | 35 | 31 |
| Chingleput | .. | ·1 | — | — | — | 1 | 1 | 1 | 1 |
| S. Arcot | .. | 13 | 2 | 3 | 6 | 15 | 5 | 5 | 8 |
| Chittoor | .. | ·3 | — | — | — | ·5 | — | — | — |
| N. Arcot | .. | 1 | ·3 | ·1 | — | 2 | 1 | 1 | 1 |
| Salem | .. | 85 | 44 | 37 | 20 | 86 | 45 | 38 | 21 |
| Coimbatore | .. | 380 | 296 | 276 | 163 | 394 | 299 | 279 | 168 |
| Trichinopoly | .. | 42 | 31 | 27 | 15 | 43 | 31 | 27 | 15 |
| Tanjore | .. | ·1 | — | — | — | ·9 | 2 | 1 | 1 |
| Madura | .. | 190 | 146 | 132 | 85 | 191 | 147 | 132 | 85 |
| Ramnad | .. | 206 | 160 | 152 | 138 | 206 | 160 | 152 | 138 |
| Tinnevelly | .. | 273 | 259 | 231 | 203 | 274 | 260 | 232 | 204 |
| Malabar | .. | 3 | 2 | 2 | 1 | 3 | 2 | 2 | 1 |
| S. Kanara | .. | ·2 | ·1 | ·2 | ·1 | 1 | 1 | 1 | 1 |
| The Nilgiris | .. | — | — | — | — | — | — | — | — |
| The State | .. | 2184 | 1611 | 1567 | 1298 | 2433 | 1832 | 1723 | 1423 |

IX (CONTINUED)

*State*

Crops — 1940-48 (in thousand acres)

| Tobacco | | | | Drugs and Narcotics | | | | Fodder Crops | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Average for 1940-45 | 1945-46 | 1946-47 | 1947-48 | Average for 1940-45 | 1945-46 | 1946-47 | 1947-48 | Average for 1940-45 | 1945-46 | 1946-47 | 1947-48 |
| 26 | 19 | 16 | 15 | 27 | 20 | 16 | 16 | ·7 | 4 | 1 | 2 |
| 23 | 24 | 21 | 19 | 25 | 24 | 21 | 19 | 19 | 23 | 22 | 15 |
| 19 | 24 | 22 | 26 | 19 | 25 | 22 | 26 | 13 | 18 | 24 | 17 |
| 18 | 20 | 17 | 19 | 19 | 20 | 17 | 19 | 81 | 95 | 70 | 35 |
| 141 | 162 | 184 | 154 | 142 | 163 | 185 | 154 | 115 | 98 | 175 | 109 |
| 7 | 33 | 6 | 3 | 10 | 36 | 6 | 5 | 1 | 2 | 4 | 3 |
| 2 | 6 | 2 | 1 | 2 | 6 | 2 | 1 | ·3 | ·4 | ·2 | ·2 |
| 3 | 5 | 1 | 3 | 5 | 7 | 3 | 4 | 2 | 2 | 2 | 1 |
| 2 | 2 | 1 | 1 | 2 | 3 | 2 | 2 | ·1 | ·1 | ·1 | 1 |
| 3 | 3 | 2 | 2 | 4 | 4 | 2 | 3 | 29 | 31 | 33 | 24 |
| — | — | — | — | 1 | 1 | 1 | 1 | ·2 | — | 1 | — |
| 2 | 2 | 1 | 2 | 3 | 2 | 3 | 3 | ·4 | ·2 | 1 | 4 |
| 3 | ·4 | ·3 | ·2 | 2 | 2 | 1 | ·2 | ·4 | 1 | 1 | 1 |
| 2 | 1 | 1 | 1 | 3 | 3 | 3 | 3 | ·1 | ·1 | ·3 | ·3 |
| 5 | 6 | 4 | 5 | 20 | 21 | 19 | 19 | 5 | 8 | 1 | 8 |
| 27 | 40 | 17 | 30 | 60 | 71 | 49 | 62 | 6 | 2 | 11 | 3 |
| 4 | 3 | 1 | 3 | 6 | 5 | 3 | 4 | — | — | ·4 | — |
| 1 | 1 | 1 | 1 | 4 | 4 | 3 | 3 | ·6 | ·2 | ·1 | ·2 |
| 8 | 9 | 2 | 6 | 29 | 26 | 17 | 23 | 6 | 9 | 11 | 12 |
| 2 | 1 | 1 | 1 | 4 | 2 | 1 | 1 | 47 | 66 | 72 | 58 |
| 1 | 1 | ·2 | ·3 | 5 | 4 | 4 | 4 | 99 | 104 | 133 | 100 |
| — | — | — | — | 117 | 122 | 120 | 120 | — | — | — | — |
| 2 | 2 | 2 | 2 | 22 | 24 | 25 | 26 | 1 | — | — | — |
| — | — | — | — | 62 | 61 | 63 | 62 | — | — | — | — |
| 299 | 363 | 304 | 294 | 591 | 652 | 591 | 582 | 422 | 463 | 563 | 394 |

APPENDIX IX (CONTINUED)

*Madras State*

*Area Sown to Crops*, 1940-48

(in thousand acres)

| District | Miscellaneous non-food crops | | | | Total non-food crops | | | |
|---|---|---|---|---|---|---|---|---|
| | Average for 1940-45 | 1945-46 | 1946-47 | 1947-48 | Average for 1940-45 | 1945-46 | 1946-47 | 1947-48 |
| Vizagapatam .. | 1·3 | 8 | 4 | 4 | 462 | 465 | 429 | 415 |
| E. Godavari .. | 1 | 1 | 1 | 8 | 215 | 217 | 210 | 198 |
| W. Godavari .. | 1·6 | — | ·1 | 2 | 142 | 155 | 159 | 161 |
| Kistna .. | ·6 | ·1 | ·1 | 1 | 278 | 307 | 291 | 241 |
| Guntur .. | 13 | 3 | 1 | 1 | 725 | 735 | 718 | 550 |
| Kurnool .. | ·5 | ·1 | ·1 | ·3 | 632 | 712 | 694 | 623 |
| Bellary .. | ·9 | 2 | 1 | ·4 | 884 | 881 | 835 | 834 |
| Anantapur .. | 3 | 4 | 7 | 4 | 572 | 628 | 592 | 646 |
| Cuddapah .. | 2 | 1 | 1 | 2 | 263 | 286 | 262 | 270 |
| Nellore .. | 3 | 13 | 6 | 2 | 148 | 148 | 157 | 130 |
| Chingleput .. | 7 | 8 | 9 | 5 | 101 | 91 | 93 | 83 |
| S. Arcot .. | 11 | 5 | 7 | 7 | 503 | 433 | 489 | 482 |
| Chittoor .. | 3 | 2 | 2 | 3 | 180 | 203 | 205 | 207 |
| N. Arcot .. | 10 | 6 | 6 | 6 | 415 | 415 | 436 | 436 |
| Salem .. | 3 | 3 | 3 | 4 | 368 | 312 | 325 | 304 |
| Coimbatore .. | 1 | 10 | 22 | 20 | 712 | 627 | 615 | 539 |

APPENDIX IX (CONTINUED)

*Madras State*

*Area Sown to Crops*, 1940-48

(in thousand acres)

| District | Miscellaneous non-food crops | | | | Total non-food crops | | | |
|---|---|---|---|---|---|---|---|---|
| | Average for 1940-45 | 1945-46 | 1946-47 | 1947-48 | Average for 1940-45 | 1945-46 | 1946-47 | 1947-48 |
| Trichinopoly .. | 3 | 3 | 2 | 3 | 283 | 258 | 278 | 258 |
| Tanjore .. | 4 | 6 | 3 | 9 | 112 | 109 | 119 | 117 |
| Madura .. | 4 | 3 | 3 | 4 | 373 | 368 | 338 | 303 |
| Ramnad .. | 3 | 3 | 3 | 3 | 353 | 355 | 329 | 283 |
| Tinnevelly .. | 19 | 17 | 20 | 16 | 459 | 436 | 456 | 372 |
| Malabar .. | 39 | 45 | 65 | 45 | 541 | 551 | 579 | 540 |
| S. Kanara .. | ·2 | 9 | 9 | 10 | 76 | 81 | 92 | 93 |
| The Nilgiris ... | 5 | 5 | 1 | 1 | 67 | 67 | 66 | 64 |
| The State .. | 138 | 166 | 176 | 162 | 8685 | 8849 | 8785 | 8223 |

APPENDIX

*Madras*

Yield of Principal

| District | Paddy: Average for 1940–45 | Paddy: 1945–46 | Paddy: 1946–47 | Paddy: 1947–48 | Cholam: Average for 1940–45 | Cholam: 1945–46 | Cholam: 1946–47 | Cholam: 1947–48 |
|---|---|---|---|---|---|---|---|---|
| Vizagapatam .. | 371 | 374 | 429 | 440 | 19 | 15 | 17 | 13 |
| E. Godavari .. | 534 | 512 | 475 | 554 | 27 | 23 | 24 | 20 |
| W. Godavari .. | 563 | 491 | 624 | 626 | 19 | 17 | 17 | 16 |
| Kistna .. | 456 | 470 | 489 | 481 | 67 | 56 | 55 | 58 |
| Guntur .. | 324 | 337 | 280 | 325 | 101 | 92 | 65 | 125 |
| Kurnool .. | 48 | 42 | 52 | 61 | 132 | 95 | 82 | 121 |
| Bellary .. | 21 | 14 | 10 | 20 | 103 | 57 | 93 | 118 |
| Anantapur .. | 75 | 34 | 87 | 86 | 51 | 25 | 33 | 41 |
| Cuddapah .. | 95 | 57 | 89 | 75 | 73 | 49 | 41 | 58 |
| Nellore .. | 287 | 192 | 257 | 205 | 86 | 61 | 40 | 76 |
| Chingleput .. | 390 | 260 | 397 | 217 | 1 | 1 | 1 | 1 |
| S. Arcot .. | 435 | 344 | 427 | 312 | 20 | 18 | 16 | 6 |
| Chittoor .. | 180 | 110 | 169 | 92 | 14 | 7 | 9 | 5 |
| N. Arcot .. | 388 | 249 | 393 | 279 | 23 | 15 | 18 | 15 |
| Salem .. | 198 | 140 | 190 | 152 | 87 | 74 | 71 | 37 |
| Coimbatore .. | 93 | 84 | 100 | 101 | 162 | 118 | 107 | 84 |
| Trichinopoly .. | 277 | 208 | 244 | 216 | 68 | 60 | 47 | 52 |
| Tanjore .. | 926 | 875 | 832 | 910 | — | — | — | — |
| Madura .. | 303 | 247 | 294 | 265 | 88 | 78 | 97 | 61 |
| Ramnad .. | 248 | 151 | 303 | 99 | 17 | 11 | 16 | 10 |
| Tinnevelly .. | 287 | 246 | 307 | 177 | 38 | 32 | 27 | 32 |
| Malabar .. | 496 | 490 | 492 | 413 | ·2 | ·2 | ·1 | — |
| S. Kanara .. | 372 | 396 | 382 | 350 | — | — | — | — |
| The Nilgiris .. | 5 | 5 | 5 | 5 | — | — | — | — |
| The State .. | 7375 | 6331 | 7342 | 6462 | 1198 | 904 | 881 | 946 |

X

*State*

Crops, 1940-48 (in thousand tons)

| Cumbu | | | | Ragi | | | | Korra | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Average for 1940–45 | 1945–46 | 1946–47 | 1947–48 | Average for 1940–45 | 1945–46 | 1946–47 | 1947–48 | Average for 1940–45 | 1945–46 | 1946–47 | 1947–48 |
| 47 | 41 | 40 | 41 | 84 | 76 | 66 | 62 | 3 | 2 | 2 | 2 |
| 14 | 12 | 11 | 11 | 8 | 4 | 5 | 6 | 1 | 1 | 1 | 1 |
| 3 | 2 | 2 | 2 | 3 | 2 | 1 | 1 | 1 | ·2 | ·1 | ·1 |
| 5 | 4 | 4 | 3 | 3 | 1 | 1 | 1 | ·3 | ·4 | ·1 | ·1 |
| 45 | 51 | 36 | 49 | 9 | 7 | 6 | 8 | 20 | 23 | 11 | 17 |
| 17 | 14 | 14 | 19 | 12 | 11 | 10 | 7 | 60 | 52 | 47 | 57 |
| 21 | 15 | 26 | 21 | 6 | 4 | 5 | 4 | 65 | 44 | 11 | 78 |
| 23 | 12 | 19 | 25 | 52 | 32 | 46 | 46 | 41 | 21 | 37 | 41 |
| 37 | 25 | 27 | 32 | 38 | 27 | 28 | 35 | 17 | 11 | 11 | 14 |
| 49 | 35 | 39 | 46 | 50 | 42 | 54 | 49 | 7 | 7 | 7 | 8 |
| 4 | 2 | 4 | 1 | 32 | 18 | 29 | 25 | ·2 | ·1 | ·2 | — |
| 26 | 23 | 28 | 19 | 44 | 35 | 40 | 30 | 3 | 3 | 3 | 2 |
| 39 | 24 | 28 | 24 | 70 | 48 | 55 | 34 | 1 | ·2 | ·3 | ·3 |
| 21 | 13 | 16 | 16 | 54 | 44 | 45 | 47 | ·6 | ·3 | ·2 | ·2 |
| 93 | 72 | 68 | 50 | 108 | 92 | 97 | 83 | 4 | 4 | 4 | 3 |
| 65 | 54 | 48 | 41 | 95 | 77 | 77 | 76 | 7 | 5 | 6 | 5 |
| 59 | 45 | 47 | 40 | 25 | 16 | 17 | 18 | ·2 | ·1 | ·1 | ·1 |
| 2 | 1 | 1 | 1 | 6 | 4 | 5 | 1 | — | — | — | — |
| 11 | 10 | 12 | 7 | 29 | 22 | 26 | 18 | 3 | 3 | 2 | 3 |
| 24 | 13 | 15 | 6 | 36 | 23 | 27 | 10 | ·1 | — | — | — |
| 35 | 23 | 26 | 17 | 18 | 13 | 15 | 14 | ·1 | — | — | — |
| — | — | — | — | 6 | 3 | 3 | 1 | ·2 | ·2 | ·2 | ·2 |
| — | — | — | — | 2 | 3 | 3 | 3 | — | — | — | — |
| — | — | — | — | 2 | 1 | 1 | 1 | — | — | — | — |
| 640 | 492 | 510 | 481 | 792 | 606 | 660 | 579 | 234 | 177 | 145 | 232 |

APPENDIX

*Madras*

Yield of Principal

| District | | Varugu | | | | Samai | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | Average for 1940–45 | 1945–46 | 1946–47 | 1947–48 | Average for 1940–45 | 1945–46 | 1946–47 | 1947–48 |
| Vizagapatam | .. | 2 | 2 | 3 | 2 | 5 | 5 | 3 | 3 |
| E. Godavari | .. | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| W. Godavari | .. | ·7 | ·2 | 1 | ·4 | 1 | 1 | 1 | 1 |
| Kistna | .. | 1 | 1 | 1 | 1 | — | — | — | — |
| Guntur | .. | 6 | 4 | 4 | 7 | ·3 | ·1 | — | — |
| Kurnool | .. | 17 | 19 | 2 | 21 | ·1 | — | — | ·1 |
| Bellary | .. | ·1 | ·1 | — | ·2 | 1 | 1 | 1 | 1 |
| Anantapur | .. | 5 | 3 | 5 | 10 | 11 | 5 | 7 | 9 |
| Cuddapah | .. | 7 | 6 | 6 | 7 | ·7 | ·2 | ·3 | 1 |
| Nellore | .. | 25 | 17 | 21 | 18 | ·4 | ·1 | ·2 | ·3 |
| Chingleput | .. | 10 | 4 | 6 | 4 | — | — | — | — |
| S. Arcot | .. | 75 | 65 | 55 | 44 | ·6 | ·1 | ·4 | ·2 |
| Chittoor | .. | 4 | 3 | 3 | 3 | 3 | 2 | 2 | 3 |
| N. Arcot | .. | 27 | 17 | 15 | 15 | 6 | 4 | 5 | 5 |
| Salem | .. | 19 | 16 | 15 | 15 | 25 | 23 | 22 | 10 |
| Coimbatore | .. | 1 | 1 | 2 | 2 | 11 | 8 | 7 | 6 |
| Trichinopoly | .. | 60 | 50 | 44 | 39 | 4 | 2 | 3 | 2 |
| Tanjore | .. | 14 | 12 | 10 | 8 | — | — | — | — |
| Madura | .. | 22 | 18 | 16 | 20 | 22 | 13 | 10 | 6 |
| Ramnad | .. | 30 | 17 | 16 | 6 | 3 | 2 | 1 | ·4 |
| Tinnevelly | .. | 3 | 3 | 1 | 1 | 8 | 5 | 4 | 2 |
| Malabar | .. | ·1 | — | — | — | 2 | 1 | 1 | 1 |
| S. Kanara | .. | — | — | — | — | — | — | — | — |
| The Nilgiris | .. | — | — | — | — | 1 | 1 | 1 | 1 |
| The State | .. | 333 | 259 | 225 | 224 | 107 | 75 | 72 | 61 |

X (CONTINUED)

*State*

Crops, 1940-48 (in thousand tons)

| Bengal Gram | | | | Sugarcane (Jaggery) | | | | Groundnut | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Average for 1940-45 | 1945-46 | 1946-47 | 1947-48 | Average for 1940-45 | 1945-46 | 1946-47 | 1947-48 | Average for 1940-45 | 1945-46 | 1946-47 | 1947-48 |
| ·5 | — | ·1 | — | 68 | 59 | 74 | 71 | 103 | 106 | 122 | 94 |
| 1 | 1 | 1 | 1 | 34 | 33 | 50 | 57 | 3 | 3 | 2 | 3 |
| ·7 | ·7 | ·5 | 1 | 8 | 10 | 25 | 32 | 13 | 13 | 11 | 12 |
| 1 | ·6 | ·7 | 1 | 11 | 15 | 14 | 18 | 61 | 71 | 59 | 63 |
| 1 | 2 | 1 | 2 | 1 | 1 | 10 | 1 | 114 | 120 | 84 | 78 |
| 3 | 5 | 6 | 5 | ·9 | 1 | 2 | 1 | 181 | 228 | 219 | 186 |
| 2 | 1 | 2 | 3 | 27 | 25 | 30 | 43 | 135 | 119 | 106 | 146 |
| 1 | 1 | 2 | 2 | 7 | 11 | 15 | 22 | 130 | 104 | 157 | 181 |
| ·4 | 1 | 2 | 1 | 2 | 2 | 3 | 6 | 75 | 77 | 78 | 78 |
| 1 | — | — | — | ·1 | — | — | ·1 | 8 | 6 | 6 | 5 |
| — | — | — | — | 1 | 1 | 1 | 2 | 27 | 23 | 20 | 16 |
| — | — | — | — | 51 | 55 | 75 | 90 | 170 | 154 | 158 | 151 |
| — | — | — | — | 43 | 56 | 67 | 74 | 70 | 62 | 76 | 75 |
| — | — | — | — | 32 | 40 | 49 | 81 | 151 | 122 | 157 | 149 |
| ·1 | ·1 | ·2 | — | 25 | 23 | 27 | 43 | 83 | 80 | 91 | 115 |
| ·7 | ·4 | ·1 | 1 | 37 | 37 | 52 | 70 | 81 | 82 | 99 | 92 |
| ·1 | — | — | — | 27 | 35 | 44 | 57 | 63 | 58 | 64 | 54 |
| — | — | — | — | 3 | 3 | 5 | 10 | 21 | 19 | 79 | 19 |
| — | — | — | — | 10 | 14 | 27 | 43 | 61 | 67 | 60 | 56 |
| ·1 | — | — | — | 1 | 1 | 3 | 4 | 29 | 39 | 31 | 21 |
| ·1 | — | — | — | ·6 | 1 | 1 | 2 | 8 | 2 | 11 | 5 |
| ·1 | — | — | — | ·2 | ·3 | ·4 | ·4 | 3 | 2 | 2 | 2 |
| — | — | — | — | 12 | 17 | 16 | 17 | — | — | — | — |
| — | — | — | — | — | — | — | — | — | — | — | — |
| 10 | 12 | 17 | 16 | 403 | 437 | 592 | 754 | 1593 | 1564 | 1690 | 1801 |

APPENDIX

*Madras*

Yield of Principal

| District | | Gingelly | | | | Castor | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | Average for 1940–45 | 1945–46 | 1946–47 | 1947–48 | Average for 1940–45 | 1945–46 | 1946–47 | 1947–48 |
| Vizagapatam | .. | 17 | 15 | 14 | 14 | ·2 | ·1 | ·1 | ·1 |
| E. Godavari | .. | 9 | 10 | 10 | 9 | ·1 | ·1 | ·2 | ·1 |
| W. Godavari | .. | 8 | 9 | 10 | 9 | ·7 | ·5 | ·6 | 1 |
| Kistna | .. | ·9 | 1 | 1 | 1 | ·3 | ·2 | ·1 | ·1 |
| Guntur | .. | ·1 | ·2 | ·2 | ·3 | 3 | 3 | 2 | 2 |
| Kurnool | .. | ·1 | ·1 | — | — | 2 | 2 | 2 | 2 |
| Bellary | .. | 1 | 1 | 2 | 1 | 2 | 1 | 1 | 1 |
| Anantapur | .. | 2 | 2 | 2 | 2 | 4 | 3 | 3 | 3 |
| Cuddapah | .. | ·3 | ·2 | ·2 | ·3 | ·9 | ·3 | ·3 | ·4 |
| Nellore | .. | ·3 | ·2 | 1 | 1 | 4 | 4 | 3 | 4 |
| Chingleput | .. | 2 | 2 | 2 | 2 | — | — | — | — |
| S. Arcot | .. | 6 | 3 | 4 | 4 | ·1 | — | — | — |
| Chittoor | .. | ·6 | ·4 | ·5 | ·2 | ·5 | ·3 | ·3 | ·3 |
| N. Arcot | .. | 2 | 1 | 1 | 1 | ·9 | ·4 | ·3 | ·3 |
| Salem | .. | 9 | 4 | 4 | 4 | 4 | 3 | 3 | 3 |
| Coimbatore | .. | 6 | 2 | 3 | 4 | 1 | 1 | ·8 | 1 |
| Trichinopoly | .. | 11 | 7 | 9 | 10 | 1 | 1 | ·9 | 1 |
| Tanjore | .. | 2 | 2 | 3 | 2 | ·1 | — | — | — |
| Madura | .. | 3 | 3 | 3 | 3 | ·3 | ·2 | ·1 | ·1 |
| Ramnad | .. | 3 | 2 | 2 | 2 | ·1 | — | — | — |
| Tinnevelly | .. | 4 | 3 | 2 | 2 | ·1 | — | — | — |
| Malabar | .. | ·9 | 1 | ·5 | 1 | ·1 | — | — | — |
| S. Kanara | .. | ·3 | ·3 | ·3 | ·3 | — | — | — | — |
| The Nilgiris | .. | — | — | — | — | — | — | — | — |
| The State | .. | 88 | 67 | 79 | 72 | 25 | 19 | 19 | 20 |

X (Continued)

*State*

*Crops*, 1940-48

Cotton — in thousand bales of 400 lbs. each
rest — in thousand tons

| Tobacco | | | | Cotton | | | | Horsegram | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Average for 1940-45 | 1945-46 | 1946-47 | 1947-48 | Average for 1940-45 | 1945-46 | 1946-47 | 1947-48 | Average for 1940-45 | 1945-46 | 1946-47 | 1947-48 |
| 11 | 8 | 5 | 5 | 1 | ·5 | ·6 | 1 | 10 | 8 | 12 | 9 |
| 8 | 7 | 7 | 6 | 1 | ·4 | ·8 | 1 | 6 | 5 | 5 | 5 |
| 6 | 8 | 7 | 8 | ·1 | — | — | — | 9 | 4 | 4 | 4 |
| 6 | 6 | 5 | 5 | ·9 | ·2 | ·3 | — | 3 | 2 | 2 | 3 |
| 51 | 58 | 63 | 52 | 9 | 8 | 7 | 6 | 2 | 2 | 2 | 3 |
| 2 | 9 | 2 | 1 | 19 | 9 | 10 | 8 | 6 | 4 | 5 | 6 |
| ·7 | 1 | ·4 | ·2 | 55 | 29 | 42 | 52 | 7 | 4 | 6 | 8 |
| 1 | 1 | ·4 | 1 | 15 | 5 | 10 | 9 | 19 | 5 | 13 | 17 |
| 1 | 2 | ·9 | 1 | 7 | 3 | 3 | 3 | 4 | 2 | 3 | 2 |
| 2 | 1 | ·8 | 1 | 5 | 4 | 4 | 5 | 8 | 3 | 6 | 6 |
| — | — | — | — | ·1 | — | — | — | ·9 | ·2 | ·2 | ·1 |
| 1 | 1 | ·4 | 1 | 2 | ·3 | ·5 | 1 | ·5 | ·2 | ·3 | ·2 |
| ·1 | ·2 | ·1 | ·1 | ·1 | — | — | — | 3 | 1 | 2 | 1 |
| 1 | 1 | ·6 | 1 | ·1 | — | — | — | 4 | 2 | 2 | 2 |
| 2 | 2 | 1 | 2 | 29 | 14 | 12 | 7 | 21 | 15 | 17 | 12 |
| 16 | 22 | 2 | 18 | 150 | 127 | 122 | 70 | 13 | 11 | 11 | 10 |
| 2 | 1 | ·6 | 1 | 13 | 9 | 7 | 3 | 2 | 1 | 1 | 1 |
| 1 | 1 | ·4 | 1 | — | — | — | — | ·1 | — | — | — |
| 4 | 4 | 1 | 3 | 54 | 42 | 34 | 21 | 6 | 5 | 5 | 3 |
| 1 | 1 | ·2 | ·2 | 57 | 43 | 34 | 35 | 1 | 1 | ·9 | 1 |
| ·4 | ·2 | — | ·1 | 64 | 65 | 47 | 44 | 5 | 4 | 5 | 1 |
| — | — | — | — | ·5 | ·1 | ·2 | — | ·2 | ·1 | ·2 | ·1 |
| 1 | 1 | 1 | 1 | — | — | — | — | 2 | 2 | 2 | 2 |
| — | — | — | — | — | — | — | — | — | — | — | — |
| 119 | 133 | 108 | 107 | 486 | 361 | 336 | 296 | 132 | 83 | 106 | 96 |

APPENDIX

*Madras*

Yield of Principal

| District | Greengram | | | Redgram | | | Blackgram | | | Chillies | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1945–46 | 1946–47 | 1947–48 | 1945–46 | 1946–47 | 1947–48 | 1945–46 | 1946–47 | 1947–48 | 1945–46 | 1946–47 | 1947–48 |
| Vizagapatam | 12 | 13 | 10 | 3 | 2 | 2 | 2 | 2 | 1 | 10 | 9 | 9 |
| E. Godavari | 5 | 5 | 4 | 1 | 1 | 1 | 5 | 4 | 4 | 9 | 12 | 10 |
| W. Godavari | ·3 | ·2 | ·2 | 1 | 1 | 1 | ·3 | ·3 | ·3 | 3 | 4 | 3 |
| Kistna | 4 | 5 | 6 | 1 | 1 | 1 | 5 | 5 | 4 | 6 | 8 | 7 |
| Guntur | 2 | 2 | 6 | 3 | 2 | 4 | 3 | 4 | 6 | 18 | 22 | 28 |
| Kurnool | ·5 | ·5 | 1 | 3 | 3 | 4 | ·3 | ·1 | ·4 | 9 | 15 | 10 |
| Bellary | ·5 | 1 | 1 | 1 | 3 | 3 | — | — | — | 4 | 7 | 7 |
| Anantapur | ·1 | ·2 | ·2 | 3 | 5 | 5 | — | — | — | 8 | 9 | 10 |
| Cuddapah | ·4 | ·3 | ·4 | 1 | ·7 | 1 | — | — | — | 5 | 6 | 3 |
| Nellore | 2 | 2 | 2 | ·3 | ·3 | ·3 | ·1 | ·1 | ·1 | 4 | 4 | 3 |
| Chingleput | — | — | ·1 | — | — | — | ·5 | ·4 | 1 | 2 | 1 | 2 |
| S. Arcot | ·7 | ·7 | — | 2 | 2 | 2 | 1 | 1 | 1 | 2 | 1 | 1 |
| Chittoor | — | — | ·3 | ·8 | ·8 | 1 | — | — | — | 2 | 2 | 2 |
| N. Arcot | ·2 | ·2 | 1 | 6 | 5 | 6 | ·4 | ·5 | 1 | 2 | 2 | 3 |
| Salem | ·7 | ·7 | 1 | 2 | 3 | 2 | 1 | 1 | 1 | 9 | 8 | 11 |
| Coimbatore | ·7 | ·7 | ·2 | 1 | 1 | 1 | 2 | 1 | 1 | 8 | 8 | 8 |
| Trichinopoly | ·4 | ·5 | 5 | 4 | 4 | 5 | ·6 | ·6 | 1 | 6 | 6 | 8 |
| Tanjore | 5 | 5 | — | 1 | 1 | 1 | 2 | 2 | 2 | 2 | 1 | 2 |
| Madura | ·1 | — | — | 1 | ·5 | 1 | 2 | 2 | 2 | 4 | 5 | 5 |
| Ramnad | — | ·3 | 1 | 1 | 1 | ·3 | 2 | 2 | 1 | 5 | 4 | 4 |
| Tinnevelly | 2 | 2 | ·1 | 1 | 1 | ·4 | 5 | 5 | 3 | 7 | 9 | 9 |
| Malabar | ·2 | ·2 | 2 | 2 | 1 | ·4 | 1 | 1 | 1 | 1 | 2 | 2 |
| S. Kanara | 1 | 1 | — | — | — | — | 2 | 2 | 2 | 2 | 2 | 3 |
| The Nilgiris | — | — | — | — | — | — | — | — | — | — | — | — |
| The State | 39 | 41 | 45 | 38 | 42 | 41 | 35 | 34 | 32 | 128 | 147 | 148 |

X (CONTINUED)

*State*

Crops, 1940-48 (in thousand tons)

| Onions | | | Potatoes | | | Indigo | | | Ginger | | Pepper | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1945-46 | 1946-47 | 1947-48 | 1945-46 | 1946-47 | 1947-48 | 1945-46 | 1946-47 | 1947-48 | 1946-47 | 1947-48 | 1946-47 | 1947-48 |
| | | | | | | | Cwts. | | (tons) | | (tons) | |
| 29 | 20 | 27 | — | — | ·3 | — | — | 60 | — | — | — | — |
| 19 | 12 | 7 | — | — | — | 40 | 60 | 30 | — | — | — | — |
| 23 | 16 | 12 | — | — | — | — | — | — | — | — | — | — |
| 3 | 2 | 2 | — | — | — | 140 | 120 | 140 | — | — | — | — |
| 23 | 14 | 13 | — | — | — | 360 | 240 | 60 | — | — | — | — |
| 10 | 4 | 5 | — | — | — | 710 | 330 | 100 | — | — | — | — |
| 11 | 9 | 10 | — | — | — | 270 | 10 | — | — | — | — | — |
| 14 | 7 | 15 | — | — | — | 340 | 100 | 140 | — | — | — | — |
| 37 | 15 | 15 | — | — | — | 2270 | 460 | 620 | — | — | — | — |
| 1 | 1 | 1 | — | ·1 | — | 1410 | 1040 | 1140 | — | — | — | — |
| ·4 | 1 | 1 | — | — | — | 90 | 110 | 90 | — | — | — | — |
| 8 | 4 | 3 | — | — | — | 1410 | 1340 | 1310 | — | — | — | — |
| 2 | 1 | 1 | — | — | — | 300 | 230 | 100 | — | — | — | — |
| 4 | 3 | 5 | — | — | — | 170 | 390 | 170 | — | — | — | — |
| 8 | 4 | 10 | — | — | ·4 | 30 | 50 | 90 | — | — | — | — |
| 36 | 18 | 26 | — | — | — | 10 | — | — | — | — | — | — |
| 15 | 6 | 10 | — | — | — | 20 | 30 | 20 | — | — | — | — |
| 1 | 1 | 8 | — | — | — | — | — | — | — | — | — | — |
| 62 | 20 | 33 | ·8 | 1·63 | 1 | — | 40 | — | — | — | — | — |
| 9 | 6 | ·2 | — | — | — | 170 | 450 | 240 | — | — | — | — |
| 17 | 11 | 11 | — | — | — | 10 | 60 | 60 | — | — | — | — |
| — | — | — | — | ·2 | — | — | — | — | 3·8 | 3 | 8 | 7 |
| — | — | — | — | — | — | — | — | — | ·3 | ·2 | 1 | 1 |
| ·1 | ·1 | ·1 | 52·6 | 50·6 | 45·2 | — | — | — | — | — | — | — |
| 332 | 177 | 214 | 53 | 52·6 | 46·5 | 7750 | 5060 | 4430 | 4·2 | 3 | 9 | 8 |

APPENDIX XI

*Madras State*

Area Sown to Crops — 1948-49

(In Thousand Acres)

| District | | Net Area sown | Area sown more than once | Area irrigated | Paddy | Cholam | Cumbu | Ragi | Total cereals | Pulses | Condiments and spices | Sugarcane |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Vizagapatam | .. | 1582 | 518 | 870 | 784 | 60 | 181 | 185 | 1285 | 291 | 19 | 38 |
| E. Godavari | .. | 978 | 312 | 682 | 681 | 79 | 43 | 17 | 836 | 164 | 21 | 16 |
| W. Godavari | .. | 898 | 232 | 788 | 745 | 58 | 9 | 6 | 825 | 86 | 17 | 8 |
| Kistna | .. | 1190 | 180 | 681 | 658 | 234 | 14 | 4 | 921 | 155 | 18 | 5 |
| Guntur | .. | 2142 | 248 | 453 | 465 | 461 | 191 | 17 | 1527 | 173 | 109 | — |
| Kurnool | .. | 2075 | 60 | 108 | 90 | 620 | 69 | 22 | 1417 | 192 | 40 | — |
| Bellary | .. | 2257 | 266 | 60 | 34 | 641 | 153 | 26 | 1414 | 177 | 20 | 8 |
| Anantapur | .. | 2021 | 77 | 198 | 103 | 272 | 180 | 95 | 1162 | 309 | 25 | 6 |
| Cuddapah | .. | 1001 | 76 | 233 | 105 | 300 | 101 | 65 | 731 | 64 | 14 | 1 |
| Nellore | .. | 1315 | 155 | 545 | 414 | 356 | 115 | 96 | 1173 | 134 | 15 | — |
| Chingleput | .. | 695 | 127 | 461 | 546 | 7 | 13 | 89 | 681 | 14 | 6 | — |
| S. Arcot | .. | 1288 | 293 | 499 | 586 | 100 | 96 | 89 | 997 | 38 | 7 | 17 |
| Chittoor | .. | 745 | 89 | 241 | 186 | 34 | 138 | 141 | 522 | 31 | 13 | 12 |
| N. Arcot | .. | 1076 | 220 | 378 | 392 | 79 | 64 | 113 | 717 | 81 | 10 | 14 |
| Salem | .. | 1610 | 220 | 262 | 188 | 251 | 218 | 260 | 1122 | 265 | 21 | 10 |
| Coimbatore | .. | 1789 | 295 | 537 | 145 | 504 | 257 | 150 | 1155 | 293 | 19 | 15 |
| Trichinopoly | .. | 1535 | 190 | 431 | 446 | 294 | 218 | 61 | 1207 | 93 | 30 | 13 |
| Tanjore | .. | 1366 | 304 | 1196 | 1351 | — | 3 | 12 | 1396 | 121 | 9 | 1 |
| Madura | .. | 1160 | 195 | 455 | 362 | 305 | 42 | 50 | 884 | 91 | 18 | 5 |
| Ramnad | .. | 995 | 64 | 415 | 366 | 43 | 96 | 69 | 695 | 25 | 18 | 1 |
| Tinnevelly | .. | 1054 | 186 | 360 | 362 | 78 | 158 | 30 | 688 | 74 | 36 | — |
| Malabar | .. | 1523 | 280 | — | 808 | 1 | — | 4 | 819 | 25 | 125 | — |
| S. Kanara | .. | 570 | 250 | — | 608 | — | — | 6 | 615 | 47 | 20 | 7 |
| The Nilgiris | .. | 96 | 7 | — | 6 | — | — | 3 | 17 | — | 1 | — |
| The State | . | 30934 | 4862 | 9854 | 10430 | 4777 | 2359 | 1609 | 22805 | 2946 | 637 | 176 |

APPENDIX XI (CONTINUED)

*Madras State*

Area Sown to Crops — 1948-49 (In Thousand Acres)

| District | | Total sugar | Fruits and vegetables | Total food crops | Cotton | Total fibres | Groundnut | Total oil-seeds | Tobacco | Drugs and narcotics | Fodder crops | Total non-food crops |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Vizagapatam | .. | 41 | 63 | 1701 | 5 | 46 | 214 | 334 | 15 | 16 | 1 | 399 |
| E. Godavari | .. | 16 | 53 | 1098 | 3 | 18 | 5 | 129 | 27 | 27 | 16 | 192 |
| W. Godavari | .. | 9 | 31 | 969 | — | 3 | 30 | 111 | 29 | 29 | 16 | 161 |
| Kistna | .. | 6 | 24 | 1124 | — | 43 | 122 | 132 | 20 | 20 | 60 | 256 |
| Guntur | .. | 4 | 15 | 1829 | 39 | 106 | 157 | 188 | 170 | 170 | 96 | 561 |
| Kurnool | .. | — | 10 | 1660 | 150 | 152 | 267 | 308 | 6 | 11 | 2 | 474 |
| Bellary | .. | 10 | 6 | 1629 | 512 | 516 | 124 | 372 | 2 | 2 | — | 893 |
| Anantapur | .. | 8 | 11 | 1517 | 111 | 111 | 373 | 464 | 3 | 5 | 1 | 587 |
| Cuddapah | .. | 1 | 34 | 846 | 31 | 31 | 182 | 194 | 1 | 1 | 1 | 230 |
| Nellore | .. | 1 | 11 | 1336 | 23 | 26 | 8 | 57 | 2 | 3 | 43 | 134 |
| Chingleput | .. | 2 | 15 | 719 | — | 1 | 42 | 64 | — | 1 | — | 73 |
| S. Arcot | .. | 18 | 16 | 1077 | 5 | 7 | 431 | 475 | 2 | 3 | — | 504 |
| Chittoor | .. | 13 | 30 | 609 | — | — | 204 | 220 | — | 2 | 1 | 225 |
| N. Arcot | .. | 17 | 23 | 849 | — | 1 | 408 | 435 | 1 | 3 | — | 447 |
| Salem | .. | 11 | 28 | 1430 | 23 | 24 | 244 | 324 | 4 | 18 | 8 | 380 |
| Coimbatore | .. | 16 | 18 | 1501 | 238 | 241 | 231 | 287 | 28 | 32 | 5 | 582 |
| Trichinopoly | .. | 13 | 48 | 1394 | 21 | 22 | 192 | 286 | 3 | 4 | — | 340 |
| Tanjore | .. | 3 | 28 | 1560 | — | — | 45 | 103 | 1 | 3 | — | 110 |
| Madura | .. | 6 | 41 | 1042 | 98 | 98 | 145 | 180 | 5 | 23 | 10 | 314 |
| Ramnad | .. | 3 | 9 | 750 | 156 | 157 | 63 | 80 | 1 | 1 | 67 | 309 |
| Tinnevelly | .. | 36 | 21 | 854 | 216 | 217 | 7 | 32 | — | 3 | 115 | 385 |
| Malabar | .. | 10 | 237 | 1240 | — | — | 5 | 300 | — | 126 | — | 563 |
| S. Kanara | .. | 7 | 37 | 726 | — | 1 | — | 58 | 2 | 26 | — | 93 |
| The Nilgiris | .. | — | 19 | 37 | — | — | — | — | — | 63 | — | 65 |
| The State | .. | 251 | 827 | 27518 | 1633 | 1822 | 3699 | 5226 | 322 | 592 | 443 | 8278 |

APPENDIX

*Madras*

Yield of Principal

| District | | Paddy | Cholam | Cumbu | Ragi | Korra | Varugu | Samai | Bengal gram | Horse-gram |
|---|---|---|---|---|---|---|---|---|---|---|
| Vizagapatam | .. | 420 | 16 | 45 | 67 | 2 | 3 | 4 | — | 10 |
| E. Godavari | .. | 540 | 21 | 11 | 5 | 1 | 1 | 1 | 1 | 5 |
| W. Godavari | .. | 601 | 14 | 2 | 2 | — | 1 | 1 | 1 | 5 |
| Kistna | .. | 488 | 62 | 4 | 1 | — | 1 | — | 1 | 3 |
| Guntur | .. | 326 | 117 | 46 | 8 | 17 | 1 | — | 2 | 2 |
| Kurnool | .. | 51 | 149 | 18 | 13 | 66 | 21 | — | 8 | 8 |
| Bellary | .. | 22 | 110 | 27 | 6 | 76 | — | 1 | 3 | 7 |
| Anantapur | .. | 58 | 46 | 25 | 50 | 46 | 7 | 13 | 3 | 16 |
| Cuddapah | .. | 52 | 61 | 25 | 35 | 15 | 6 | — | 1 | 3 |
| Nellore | .. | 226 | 79 | 41 | 56 | 7 | 33 | 1 | — | 8 |
| Chingleput | .. | 165 | 2 | 2 | 24 | — | 6 | — | — | — |
| S. Arcot | .. | 261 | 17 | 17 | 36 | 3 | 46 | — | — | — |
| Chittoor | .. | 94 | 8 | 24 | 46 | — | 2 | 1 | — | 1 |
| N. Arcot | .. | 176 | 19 | 15 | 52 | — | 13 | 4 | — | 2 |
| Salem | .. | 117 | 66 | 56 | 80 | 3 | 12 | 17 | — | 14 |
| Coimbatore | .. | 96 | 137 | 44 | 64 | 6 | 2 | 7 | 1 | 11 |
| Trichinopoly | .. | 254 | 70 | 47 | 20 | — | 60 | 2 | — | 1 |
| Tanjore | .. | 829 | — | 1 | 4 | — | 8 | — | — | — |
| Madura | .. | 266 | 96 | 9 | 24 | 3 | 16 | 7 | — | 4 |
| Ramnad | .. | 185 | 17 | 15 | 30 | 1 | 22 | 1 | — | 1 |
| Tinnevelly | .. | 294 | 37 | 20 | 18 | — | 2 | 2 | — | 1 |
| Malabar | .. | 479 | — | — | 2 | — | — | 1 | — | — |
| S. Kanara | .. | 391 | — | — | 3 | — | — | — | — | 2 |
| The Nilgiris | .. | 5 | — | — | 1 | — | — | 1 | — | — |
| The State | .. | 6395 | 1137 | 502 | 647 | 249 | 263 | 65 | 21 | 104 |

XII

*State*

(In Thousand Tons)

Crops — 1948-49

| Green-gram | Red-gram | Black-gram | Sugar-cane (Jaggery) | Ground-nut | Gingelly | Castor | Tobacco cured leaf | Cotton (bales) |
|---|---|---|---|---|---|---|---|---|
| 10 | 2 | 2 | 99 | 86 | 14 | — | 6 | 670 |
| 4 | 1 | 4 | 56 | 2 | 9 | — | 8 | 630 |
| — | 1 | — | 28 | 13 | 9 | 1 | 10 | 20 |
| 4 | 1 | 6 | 21 | 61 | 1 | — | 8 | 70 |
| 6 | 3 | 4 | 1 | 59 | — | 3 | 56 | 6910 |
| 1 | 4 | 1 | 1 | 120 | — | 2 | 2 | 16290 |
| 1 | 3 | — | 23 | 133 | 1 | 1 | — | 58150 |
| — | 5 | — | 12 | 149 | 2 | 3 | 1 | 11250 |
| — | 1 | — | 1 | 68 | — | — | — | 3150 |
| 2 | — | — | — | 3 | 1 | 4 | 1 | 3710 |
| — | — | 1 | — | 13 | 1 | — | — | 20 |
| — | 2 | 1 | 52 | 151 | 3 | — | 1 | 560 |
| — | 1 | — | 46 | 76 | — | — | — | 10 |
| — | 7 | — | 38 | 151 | 1 | — | 1 | 30 |
| 1 | 2 | 1 | 27 | 104 | 6 | 3 | 1 | 8140 |
| 1 | 2 | 1 | 55 | 98 | 3 | 1 | 15 | 102820 |
| 1 | 6 | 1 | 36 | 83 | 9 | 1 | 1 | 5510 |
| 6 | 1 | 3 | 3 | 19 | 2 | — | 1 | — |
| — | 1 | 2 | 14 | 56 | 3 | — | 2 | 27460 |
| — | 1 | 1 | 1 | 28 | 1 | — | — | 41730 |
| 1 | — | 4 | 1 | 3 | 2 | — | — | 55430 |
| — | — | 1 | 1 | 2 | — | — | — | 60 |
| 1 | — | 2 | 18 | — | — | — | 1 | 30 |
| — | — | — | — | — | — | — | — | — |
| 39 | 45 | 36 | 533 | 1480 | 71 | 21 | 114 | 341650 |

APPENDIX XIII

*Madras State*

Normal Yield per acre of Principal Crops (lbs. per acre)

| District | Paddy | | Cholam | | Cumbu | | Ragi | | Bengal gram | Horse-gram | Sugar-cane | Ground-nut | Cotton | | Tobacco |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Irri-gated | Unirri-gated | Irri-gated | Unirri-gated | Irri-gated | Unirri-gated | Irri-gated | Unirri-gated | | | | | Irri-gated | Unirri-gated | |
| Vizagapatam | 1400 | 800 | 1300 | 700 | 1200 | 700 | 1200 | 700 | 425 | 170 | 5879 | 896 | — | 58 | 1000 |
| E. Godavari | 2000 | 900 | 1300 | 700 | 1200 | 630 | 1200 | 800 | 400 | 170 | 5465 | 1120 | — | 75 | 998 |
| W. Godavari | 2000 | 1000 | 1300 | 700 | 1200 | 630 | 1300 | 800 | 440 | 170 | 8534 | 1120 | — | 75 | 976 |
| Kistna | 1800 | 1000 | 1300 | 700 | 1200 | 630 | 1600 | 800 | 425 | 186 | 9320 | 952 | — | 75 | 934 |
| Guntur | 1800 | 1100 | 1300 | 630 | 1200 | 630 | 1900 | 800 | 385 | 160 | 8395 | 1064 | — | 75 | 878 |
| Kurnool | 1600 | 1000 | 1400 | 630 | 1200 | 550 | 1600 | 650 | 450 | 180 | 5040 | 1064 | — | 50 | 650 |
| Bellary | 1700 | 900 | 1500 | 450 | 1300 | 450 | 1000 | 450 | 375 | 180 | 6608 | 1064 | — | 50 | 713 |
| Anantapur | 1700 | 800 | 1400 | 450 | 1200 | 400 | 1550 | 600 | 425 | 160 | 5300 | 952 | — | 50 | 1045 |
| Cuddapah | 1800 | 900 | 1500 | 630 | 1300 | 700 | 1650 | 600 | 450 | 162 | 6360 | 1064 | — | 50 | 1982 |
| Nellore | 1550 | 1100 | 1300 | 600 | 1300 | 700 | 1650 | 600 | 425 | 164 | 6360 | 918 | — | 75 | 1500 |
| Chingleput | 1550 | 1100 | 1400 | 600 | 1000 | 650 | 1100 | 600 | 370 | 168 | 6900 | 986 | 250 | 50 | 1000 |
| S. Arcot | 1850 | 1100 | 1500 | 600 | 1000 | 700 | 1500 | 800 | 425 | 176 | 7360 | 974 | 250 | 50 | 1000 |
| Chittoor | 1900 | 1000 | 1500 | 600 | 1000 | 650 | 1800 | 700 | 500 | 180 | 8844 | 1064 | 250 | 50 | 1100 |
| N. Arcot | 1900 | 1100 | 1500 | 600 | 1200 | 650 | 1550 | 800 | 415 | 180 | 6000 | 974 | 250 | 50 | 1400 |
| Salem | 1900 | 800 | 1500 | 600 | 1300 | 600 | 1500 | 750 | 500 | 200 | 5992 | 1064 | 250 | 95 | 877 |
| Coimbatore | 1900 | 800 | 1500 | 600 | 1200 | 400 | 1700 | 800 | 390 | 142 | 8740 | 1008 | 306 | 94 | 1500 |
| Trichinopoly | 1900 | 1000 | 1500 | 500 | 1200 | 500 | 1400 | 650 | 475 | 170 | 6160 | 1075 | 275 | 85 | 1049 |
| Tanjore | 1750 | 1100 | 1500 | 500 | 1200 | 700 | 1100 | 500 | 475 | 180 | 6384 | 1008 | 250 | 65 | 1000 |
| Madura | 1950 | 900 | 1400 | 600 | 1000 | 450 | 1400 | 650 | 425 | 180 | 6572 | 1042 | 250 | 110 | 1150 |
| Ramnad | 1800 | 1100 | 1400 | 400 | 1000 | 400 | 1500 | 400 | 450 | 180 | 4770 | 1064 | 300 | 104 | 1100 |
| Tinnevelly | 2000 | 1000 | 1500 | 350 | 1000 | 450 | 1600 | 500 | 400 | 170 | 6360 | 1008 | 250 | 103 | 1100 |
| Malabar | — | 1400 | — | 700 | — | — | — | 1500 | — | 148 | 5346 | 1008 | — | 65 | 1200 |
| S. Kanara | — | 1500 | — | — | — | — | — | 1000 | — | 188 | 5940 | 1120 | — | 65 | 1200 |
| The Nilgiris | — | 1800 | — | 500 | — | — | — | 1000 | — | 194 | — | — | — | — | 1200 |
| The State | 1790 | 1308 | 1467 | 577 | 1207 | 544 | 1492 | 715 | 418 | 170 | 6916 | 1012 | 286 | 78 | 992 |

M. 51

APPENDIX XIV

Comparative Statement of the Average Yields of Principal Crops in the Indian Provinces, 1936-37 (lbs. per acre)

| Province | Paddy (husked) | | | Jowar | | | Bajra | | | Ragi | | | Sugarcane (gur) | | | Cotton (cleaned) | | | Tobacco |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Irri-gated | Unirri-gated | Both | Irri-gated | Unirri-gated | Both | Irri-gated | Unirri-gated | Both | Irri-gated | Unirri-gated | Both | Irri-gated | Unirri-gated | Both | Irri-gated | Unirri-gated | Both | |
| Madras | 1195 | 865 | 1120 | 1244 | 492 | 560 | 969 | 462 | 520 | 1338 | 647 | 1012 | 6462 | — | — | 233 | 72 | 88 | 1220 |
| Bombay | — | 1207 | — | 1500 | 625 | 644 | — | 412 | — | 1400 | 877 | 881 | 6977 | — | — | 338 | 113 | 115 | 1038 |
| Bengal | — | — | 1042 | — | — | — | — | — | — | — | — | — | — | — | 4446 | — | — | 126 | 1115 |
| U.P. | 1050 | 800 | 800 | — | 600 | — | — | 500 | — | — | — | — | 3050 | — | — | 220 | 120 | 170 | — |
| C.P. | — | — | 661 | — | 652 | — | — | — | — | — | — | — | — | — | 3348 | — | 102 | — | 700 |
| Bihar | — | — | 741 | — | — | 823 | — | — | 823 | — | — | 823 | — | — | 2688 | — | — | 155 | 1120 |
| Orissa | — | — | 742 | — | — | 600 | — | — | 455 | — | — | 657 | — | — | 5186 | — | — | 84 | 1025 |
| Assam | — | 929 | — | — | — | — | — | — | — | — | — | — | — | 2722 | — | — | 196 | — | 1120 |
| Punjab | 819 | 521 | 747 | 488 | 311 | 346 | 527 | 321 | 344 | — | — | — | 2026 | 1386 | 1915 | 196 | 119 | 191 | 915 |
| N.-W. F. P. | 864 | — | 864 | 798 | 251 | 378 | 569 | 404 | 480 | — | — | — | 2494 | — | — | 108 | 62 | 99 | — |
| Sind | 1052 | — | — | 626 | 385 | — | 499 | 200 | — | — | — | — | 5886 | — | — | 225 | — | — | — |
| Average for Br. India | — | — | 939 | — | — | 575 | — | — | 429 | — | — | 921 | — | — | 3161 | — | — | 127 | 1112 |
| Burma | — | — | 1000 | — | — | 450 | — | — | — | — | — | — | — | — | — | — | — | 110 | — |
| Indo-China | — | — | 637 | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Siam | — | — | 961 | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| China | — | — | 1554 | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Japan | — | — | 2053 | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Egypt | — | — | 1799 | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| U.S.A. | — | — | 1413 | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Spain | — | — | 3709 | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Italy | — | — | 2963 | — | — | — | — | — | — | | | | | | | | | | |

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